IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS

UNITED STATES OF AMERICA	§	
	§	
Plaintiff,	§	
	§	
v.	§	CIVIL ACTION NO.
	§	H-90-2406
BEAZER EAST, INC.,	§	
	§	
Defendant.	§	

CONSENT DECREE

90-11-2-535

L0185/0506/01II21

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SOUTH CAVALCADE CERCLA RD/RA CONSENT DECREE

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CONSENT DECREE

I. BACKGROUND

A. The United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("EPA"), filed a Complaint in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act, as amended, ("CERCLA"), 42 U.S.C. §§ 9606, 9607.

B. The United States in its Complaint seeks: (1) reimbursement of costs incurred by EPA in response to releases or threatened releases of hazardous substances at the South Cavalcade Superfund Site in Houston, Texas, together with accrued interest; (2) an injunction requiring Beazer East, Inc. (hereafter "Beazer") to perform and fund the Work at that Site in conformance with the Record of Decision (as defined below) and the National Contingency Plan ("NCP"), 40 C.F.R. Part 300 (as amended); (3) a declaratory judgment stating that Beazer is liable for all future costs incurred by EPA in response to releases or a substantial threat of a release of a

hazardous substance which are not inconsistent with the NCP and (4) such other relief as the Court finds appropriate.

C. In accordance with Section 121(f)(l)(F) of CERCLA, 42 U.S.C. § 9621(f)(l)(F), EPA notified the State of Texas (the "State") on November 29, 1989, of negotiations with potentially responsible parties regarding the scope of the work to be performed at the Site, and EPA has provided the State with an opportunity to participate in such negotiations and be a party to any settlement.

D. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the South Cavalcade Superfund Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on June 10, 1986, 51 *Fed. Reg.* 21070.

E. In response to a release or a substantial threat of a release of a hazardous substance at or from the Site, the Koppers Company, Inc. (now Beazer East, Inc.) commenced in May 1985, under an EPA Administrative Order on Consent, a Remedial Investigation and Feasibility Study ("RI/FS") for the Site pursuant to 40 C.F.R. § 300.68 for the purpose of identifying the hazards posed, if any, by the site and evaluating alternatives for remediation of the site.

F. The Koppers Company, Inc. completed a Remedial Investigation ("RI") Report on August 1, 1988, and completed a Feasibility Study ("FS") Report on August 19, 1988.

G. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, EPA published notice of the completion of the FS and of the proposed plan for Remedial Action on August 19, 1988, and provided opportunity for public comment on the proposed Remedial Action.

H. The decision by EPA on the Remedial Action to be implemented at the South Cavalcade Superfund Site is embodied in a final Record of Decision ("ROD"), executed on September 26, 1988, on which the State has given its concurrence.

I. In accordance with Section 121(d)(l) of CERCLA, EPA, and Beazer ("the Parties") agree that the Remedial Action Plan adopted by EPA and embodied herein will attain a degree of cleanup of hazardous substances released at the Site and control of further releases that assures protection of human health and the environment at the Site.

J. The Parties recognize, and the Court by entering this Decree finds, that implementation of this Decree will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the Parties, and that entry of this Decree is in the public interest.

K. Beazer denies any and all legal or equitable liability under any federal or state statute, regulation, ordinance or common law arising out of the transactions and occurrences alleged in the Complaint.

NOW, THEREFORE, without trial, adjudication, or admission of any issue of law, fact, liability, or responsibility by Beazer, and without this Decree being admissible as evidence in any proceeding except in a proceeding to enforce the terms of this Decree or as otherwise specifically provided in this Decree, it is hereby Ordered, Adjudged, and Decreed:

II. JURISDICTION

The Court has jurisdiction over the subject matter and the Parties. The Parties agree that the proper venue for this matter is the Southern District of Texas. Beazer agrees not to contest the jurisdiction of the Court to enter this Decree or in any subsequent action by the

Parties to enforce, modify or terminate it. The Complaint states a cause of action upon which, if the allegations were proven, relief could be granted.

III. PARTIES

The parties to this Decree are the Plaintiff, United States of America, on behalf of the U.S. Environmental Protection Agency, and Beazer East, Inc.

IV. SITE HISTORY

The South Cavalcade Superfund Site is located in northeast Houston, Texas about one mile southwest of the intersection of Interstate Loop 610 and U.S. Route 59. The Site boundaries are Cavalcade Street to the north, Collingsworth Street to the south, and the Missouri and Pacific railroad lines to the east and west. The Site is rectangular in shape with a width of approximately 600 feet, a length of 4,800 feet, and an area of 66 acres.

The Site is generally flat. It is drained by two stormwater drainage ditches which flank the Site on the east and west sides and drain water into a flood control channel which discharges into Hunting Bayou, a tributary of the Houston Ship Channel. Hunting Bayou is currently classified in the Texas water quality standards as a limited aquatic habitat.

The Site is now used by three commercial trucking companies (Merchants Fast Motor Lines, Transcon Lines, and Palletized Trucking) and contains buildings on the northern and southern parts of the Site. The Site is presently owned by the Baptist Foundation of Texas, Rex King and Merchants, Inc. The central part of the Site is not currently used. The surrounding areas are residential, commercial, and industrial properties. The nearest residential area is directly to the west. Commercial properties are located along the major thoroughfares as well as on-site.

The South Cavalcade Superfund Site was used as a wood preserving and a coal tar distillation facility from 1910 to 1962. The wood preserving facility consisted of an operations area, a drip track, and treated and untreated cylinders, chemical storage tanks, and a wastewater lagoon; this area was located in the southwestern part of the Site. Creosote and metallic salts were used in the operation. The drip track ran diagonally from the operations area to the northeast and ended before the central part of the Site. The coal tar plant was located in the southeastern part of the Site.

In 1962, the Koppers Company ceased operation of the facility and sold the Site to Merchants Fast Motor Lines. Merchants later sold, subdivided, and resold portions of the site.

V. EPA RESPONSE HISTORY

In 1983, the Houston Metropolitan Transit Authority investigated the Site for potential mass transit use and found evidence of creosote. The Texas Department of Water Resources (TDWR), (renamed the Texas Water Commission in 1985), conducted a further study and determined that the Site may pose a threat to public health and the environment. Based on this information, TDWR referred the Site to EPA for inclusion on the National Priorities List (NPL). EPA proposed the Site to be added to the NPL in October 1984; the Site was formally added to the NPL on June 10, 1986.

The Koppers Company began the Remedial Investigation and Feasibility Study (RI/FS) in November of 1985. The Remedial Investigation included investigations into contamination in soils, groundwater, surface water and sediments, and air. The Feasibility Study evaluated several methods for remediating the Site, including containment and treatment

technologies. The RI/FS was completed in August 1988 with the publishing of the Remedial Investigation and Feasibility Study Reports.

On August 12, 1988, EPA issued a press release and the Proposed Record of Decision fact sheet. The press release was mailed to all news organizations in the Houston area; the fact sheet was mailed to 75 residents, the three on-site trucking firms, and local officials. Extra copies of the fact sheet were provided to the five local repositories for display.

In accordance with Section 117 of CERCLA, both the press release and fact sheet announced the comment period which began on August 22 and ended on September 19, 1988. A public meeting was held on August 29, 1988, at the Ryan Civic Center. Approximately 39 area citizens and local officials attended.

The FS evaluated several methods for remediating the Site, and included a Public Health and Environmental Assessment (PHEA) of the Site. After public comment on the proposed remediation, the Record of Decision was completed and signed on September 26, 1988.

Based on the available data and analyses identified in the Record of Decision, EPA selected as the most appropriate remediation at the South Cavalcade Superfund Site a combination of soil washing and soil flushing for remediating contaminated soils and activated carbon adsorption for remediating contaminated groundwater.

VI. BINDING EFFECT

This Decree applies to and is binding upon the United States and upon Beazer, its agents and its successors and assigns. Beazer shall provide a copy of this Decree, as entered, and shall provide all relevant additions and modifications to the Decree, as appropriate, to each person, (including all contractors and subcontractors), retained to perform the Work required by

this Decree, and shall condition any contract for the Work on compliance with this Decree. Beazer shall nonetheless be responsible for requiring that its contractors and subcontractors perform the Work contemplated herein in accordance with this Decree. With regard to the activities undertaken pursuant to this Decree, each contractor and subcontractor shall be deemed to be related by contract to Beazer within the meaning of section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3). Thus, as to acts or omissions of contractors, Beazer shall not assert a defense based upon CERCLA Section 107(b)(3), 42 U.S.C. § 9607(b)(3).

The insolvency or other failure of Beazer shall not relieve Beazer of its obligations to implement the requirements of this Decree. No change of corporate status shall relieve Beazer or its successors of its obligations under this Decree. The United States specifically retains its rights to seek reimbursement of expenses, injunctive, declaratory or other relief against any potentially responsible party not a signatory to this Decree.

VII. PURPOSE

The purposes of this Decree are: (1) to serve the public interest by protecting the public health, welfare, and the environment from releases or threatened releases of hazardous substances at or from the South Cavalcade Superfund Site by the implementation of the Work and any necessary post closure activities by the Beazer; and (2) to settle in accordance with the terms of this Decree the claims the United States alleged against the Beazer in the Complaint.

VIII. DEFINITIONS

Unless otherwise expressly provided herein, terms used in this Decree which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in the statute or its implementing regulations. Whenever terms listed below are

used in this Decree or in the Exhibits or Appendices attached hereto or incorporated hereunder, the following definitions shall apply:

"Appendix A" means the "Record of Decision" attached hereto.

"Appendix B" means the legal description of the South Cavalcade Superfund Site.

"Appendix C" means the Statement of Work.

"CERCLA" means the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986, Pub. L. No. 99-499, 100 Stat. 1613 (1986).

"Contaminants" means any solid waste, hazardous waste, hazardous substance, pollutant, chemical, or radioactive material as defined in federal statutes or regulations at 42 U.S.C. § 9601(33).

"Contractor" means the company or companies retained on behalf of Beazer to undertake and complete the Work. Each contractor and subcontractor shall be qualified to do those portions of the Work for which it is retained.

"CLP" means EPA's Contract Laboratory Program.

"Costs" or "Remedial Costs" means all oversight, administrative, enforcement, and response costs, direct or indirect, incurred by the United States relative to the facility.

"Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Decree, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the end of the next working day.

"Defendant" means Beazer East, Inc. (formerly Koppers Company, Inc.).

"Demobilization Phase" means the phase during which Beazer and/or Beazer's contractors demobilize equipment and personnel from the Site.

"EPA" means the United States Environmental Protection Agency.

"Environment" shall be used as that term is defined in Section 101(8) of CERCLA, 42 U.S.C. § 9601(8).

"The Fund" means the Hazardous Substance Superfund established by Section 517 of P.L. 99-499 and codified in Chapter 98, Subchapter A of the Internal Revenue Code, 26 U.S.C. § 9507.

"Ground Water" shall be used as that term is defined in Section 101(12) of CERCLA, 42 U.S.C. § 9601(12).

"Hazardous Substances" shall be used as that term is defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).

"National Contingency Plan" shall be used as that term is defined in Section 105 of CERCLA, 42 U.S.C. § 9605, and in the regulations at 40 C.F.R. §§ 300 et seq., including any subsequent final revisions thereto as promulgated in the *Federal Register*.

"Operation and Maintenance" or "O&M" means the performance of activities, as necessary, at the Site after completion of the Remedial Action to ensure that the remedy functions as designed and it includes future monitoring to assure such proper performance.

"Oversight" means the United States' surveillance of work undertaken by Beazer to ensure that the work is consistent with the National Contingency Plan, 40 CFR Part 300, as amended, and this Decree.

"Parties" means the United States and Beazer.

"Physical Construction" means the phase of the work in which necessary Site facilities and support structures and services are installed and provided.

"Plaintiff" or "United States" means the United States of America.

"Project Coordinator" means the representative of either EPA or Beazer who oversees the implementation of the Remedial Action pursuant to this Decree and coordinates communication between EPA and Beazer.

"RCRA" means the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 et seq.

"Record of Decision" or "ROD" means the document signed by the EPA Region VI Regional Administrator on September 26, 1988, which describes the Remedial Action to be conducted at the South Cavalcade Superfund Site including the remedial objectives of the Remedial Action and is attached hereto as Appendix A.

"Release" shall be used as that term is defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

"Remedial Action" means the phase of the Work involving the construction and operation of the remedy in accordance with the Remedial Design Documents, the Remedial Action Plan and the ROD.

"Remedial Action Plan" or "RAP" means a document which contains design, quality assurance/quality control, health and safety, and such other plans as are necessary for the implementation of the Remedial Design Documents and the Remedial Action pursuant to subparagraph X.C.

"Remedial Action Report" means a document describing how the Remedial Objectives set forth in the ROD have been accomplished in the Remedial Action.

"Remedial Design" means the phase of the Work wherein soil investigation and pilot studies are performed and engineering plans and technical specifications are developed pursuant to the Remedial Design Work Plan for implementation of the Remedial Action.

"Remedial Design Documents" means the engineering plans and technical specifications and supporting documents developed during the Remedial Design.

"Remedial Design Work Plan" means the workplan developed by Beazer which details the work to be conducted during the Remedial Design.

"Response Costs" means all administrative, enforcement, investigative, remedial, and removal costs, direct or indirect, incurred pursuant to CERCLA, 42 U.S.C. § 9601 *et seq.* which are not inconsistent with the NCP.

"SAS" means Special Analytical Sampling.

"Site" shall mean the South Cavalcade Superfund Site, encompassing approximately 66 acres located in northeast Houston, Texas about one mile southwest of the intersection of Interstate Loop 610 and U.S. Route 59. The Site boundaries are Cavalcade Street to the north, Collingsworth Street to the south, and the Missouri and Pacific Railroad lines to the east and the west as described in the Record of Decision and depicted in Figure 2 of the Record of Decision.

"Site Remediation" means the phase of the Remedial Action in which the remedy is undertaken through soil sampling, soil excavation, soil washing, soil flushing, and the treatment of ground water and wastewater to discharge to local water bodies or publicly owned treatment works and such other activities required pursuant to the Remedial Action Plan, in accordance with the Remedial Design Documents and the ROD.

"Site Representative" means the person who acts as an agent for the Project Coordinators for oversight of performance of daily operations during the Work.

"State" means the State of Texas.

"Statement of Work" or "SOW" shall mean the statement of work for implementation of the Remedial Design, Remedial Action, and Operation and Maintenance at the Site, as set forth in Appendix C to this Decree and incorporated herein and enforceable hereunder.

"TWC" means the Texas Water Commission which is the successor to the Texas Department of Water Resources.

"Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any "pollutant" or "contaminant" under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); and (3) any "hazardous waste" under Section 1004(5) of RCRA, 42 U.S.C. § 6903(5).

"Work" shall mean all activities Beazer is required to perform under this Decree, including Remedial Design, Remedial Action and Operation and Maintenance and any activities required to be undertaken pursuant to Sections IX, X, and XVI.

IX. OBLIGATION FOR THE WORK

A. Beazer shall finance, design, implement, perform and complete the Work in a manner consistent with the National Contingency Plan, 40 C.F.R. Part 300, and with the standards, specifications, and schedule of completion set forth in and approved by EPA pursuant to Section X herein. The Court finds and the parties agree that the Record of Decision, and the Work, as set forth in this Decree, are consistent with the NCP, provided they have been fully approved by EPA.

B. In the event EPA determines that Beazer has failed to implement the Work in accordance with this Decree, the United States may perform such portions of the Work as may be necessary. At least forty-five (45) days prior to initiating such performance, the United States shall notify Beazer's Project Coordinator of its intent to do so and the basis of its determination. If Beazer disagrees with the United States' determination, it may, within thirty (30) days of

receipt of the notice and basis, invoke the dispute resolution provisions of this Decree. Following resolution of any dispute under this section, if EPA is successful and performs all or any portion of the Work because of the Beazer's failure to comply with its obligations under this Decree, Beazer shall reimburse the United States for the costs of doing such work in accordance with Section XX.

C. All activities undertaken by Beazer pursuant to this Decree shall be undertaken in accordance with the requirements of all "legally applicable" or "relevant and appropriate" federal, state and local environmental requirements (ARARs) as required by 42 U.S.C. § 9621(d) and as specified in the ROD. The United States has determined that the obligations and procedures authorized under this Decree are consistent with its authority under applicable law and regulations.

D. Pursuant to Section 121(e) of CERCLA and the NCP, no permit shall be required for any portion of the Work conducted entirely on the Site. Where any portion of the Work requires a federal or state permit or approval under CERCLA and the NCP, Beazer shall timely submit applications and take all other actions necessary to obtain all such permits or approvals. Provided Beazer has taken all steps necessary to obtain such permits or approvals, the delay of any governmental entity to issue such permits or approvals shall constitute an event of force majeure. This Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

E. Notwithstanding any approvals which may be granted by the United States or other governmental entities, Beazer shall assume any and all liability arising from or relating to its acts or omissions, or the acts or omissions of any of its contractors, subcontractors, or any other

person(s) acting on its behalf in the performance of the Work or their failure to perform fully or complete the Work.

X. WORK TO BE PERFORMED

Beazer shall finance and perform the Work in accordance with this Decree, including the "SOW" and all standards, specifications, and schedules set forth therein or developed thereunder, and in a manner consistent with the ROD. Unless otherwise directed by EPA, Beazer shall not conduct remedial work onsite under this Decree except pursuant to approved workplans.

A. Selection of Contractor.

1. Beazer shall conduct the Work or shall select a contractor or contractors to conduct the Work, which contractor(s) shall be qualified to do business in the State of Texas. Beazer shall notify EPA of the identity and general scope of work of the contractors retained to conduct the Work prior to commencement of Work by such contractors.

2. Beazer shall provide EPA with a statement of qualifications for any contractor selected to bid on all or a portion of the Work prior to their conduct of any portion of the Work. EPA may disapprove any contractor(s) on the bid list if it determines that such contractor is not qualified to perform the Work.

3. Beazer or its contractors shall perform all Work in accordance with the schedule specified herein and in the attached Statement of Work. The schedule may be modified from time to time by written agreement of the parties or by the Order of the Court.

B. Remedial Design

1. Within thirty (30) days after entry of this Decree, Beazer shall submit for review by EPA a work plan for the design of the Remedial Action at the Site ("Remedial Design Work Plan"). The Remedial Design Work Plan shall provide for design of the remedy set forth in the ROD in accordance with the SOW. The Remedial Design Work Plan shall include a Health and Safety (H&S) Plan for field design activities which shall be prepared in conformance with applicable Occupational Safety and Health Administration and EPA requirements, including, but not limited to new OSHA regulations at 54 *Fed. Reg.* 9294 and shall be reviewed by EPA.[1]

2. The Remedial Design Work Plan shall also include plans and schedules for implementation of all remedial design and pre-design tasks identified in the SOW, including but not limited to plans and schedules for completion of the following: (a) Remedial Design sampling and analysis plan; (b) Remedial Design Quality Assurance Project Plan (RD QAPP); (c) pilot studies; (d) preliminary design submittal in compliance with Paragraph B.4.; (e) intermediate design submittal in compliance with Paragraph B.5.; (f) pre-final and final design submittals in compliance with Paragraph B.6.; (g) a community relations plan; and (h) a plan for satisfaction of permitting requirements. In addition, the Remedial Design Work Plan shall include a schedule for completion of the Remedial Action Plan (RAP).

3. Upon approval of the Remedial Design Work Plan by EPA and submittal to EPA of the H&S Plan, Beazer shall implement the Remedial Design Work Plan. Such

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[1]EPA does not approve or disapprove the Health and Safety Plan, but does review it to assure its existence and require compliance with its terms as a part of the Consent Decree.

implementation shall include EPA review and approval of all plans, submittals, or other deliverables required under Paragraph B.2. in accordance with the schedule(s) therein.

4. The preliminary design submittal (30 percent design) shall include, at a minimum, the following: (a) design criteria; (b) results of pilot studies; (c) results of additional field sampling; (d) preliminary plans, drawings, and sketches; (e) required specifications in outline form; (f) preliminary construction schedule; and (g) access agreements.

5. The intermediate design submittal shall reflect completion of approximately 60 percent of the work required for completion of the remedial design. This submittal shall consist of approximately 60 percent of the completed drawings and specifications required for the final design.

6. The pre-final design submittal shall include, at a minimum, the following: (a) final plans and specifications; (b) request for proposals or invitation for bids for Remedial Action; (c) Construction Quality Assurance Project Plan (CQAPP); (d) Confirmational Sampling Plan designed to measure progress towards meeting remedial objectives established in the ROD, and (e) the draft Operation and Maintenance Plan. The CQAPP shall detail the approach to quality assurance during construction activities at the Site and shall specify a quality assurance official (QA Official), independent of the construction contractor, who shall conduct a quality assurance program during the construction phase of the project. The final design submittal shall include B.6.a through B.6.e and shall address all of EPA's comments on the pre-final submittal.

C. Remedial Action

1. Within sixty (60) days of Beazer's selection of a Remedial Action Contractor in accordance with the schedule set forth in Section 9.5 of the Statement of Work, Beazer shall submit for EPA review and approval a Remedial Action Plan (RAP). Within sixty (60) days of receipt by EPA of the RAP, EPA shall notify Beazer of its approval/disapproval. The RAP shall provide for construction of the remedy, in accordance with the SOW, as set forth in the design plans and specifications in the final design. A Health and Safety Plan (including the Contingency Plan) for field activities required by the Remedial Action Plan shall be prepared in conformance with applicable OSHA and EPA requirements.

2. The RAP shall include methodologies, plans, and schedules for completion of at least the following: (a) selection of other Remedial Action Contractors; (b) execution of the contract for completion of the Remedial Action; (c) implementation of the CQAPP; (d) development and submission of the groundwater monitoring plan; (e) identification of and satisfactory compliance with permitting requirements; (f) implementation of the Operation and Maintenance Plan; (g) development and submission of the Remedial Action Report; and (h) completion of the Remedial Action and Operation and Maintenance. The RAP shall also include a schedule for implementation of all Remedial Action tasks identified in the final design submittal.

3. Upon approval of the RAP by EPA, Beazer shall implement the activities required under the RAP. Such implementation shall include EPA review and approval of all plans, submittals, or other deliverables or other activities required under Paragraph C.2. in accordance with the schedule(s) therein.

D. Remedial Objectives of the Record of Decision

Beazer acknowledges that nothing in this Decree constitutes a warranty or representation of any kind by Plaintiffs that compliance with this Decree will achieve the remedial objectives set forth in the ROD. If compliance with this Decree does not achieve the remedial objectives of the ROD, Plaintiff reserves its rights to institute new proceedings to seek performance of remedial action that will achieve the remedial objectives of the ROD.

E. Notification of States Receiving Offsite Shipments

1. Beazer shall, prior to any off-site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving state and to the EPA Project Coordinator of such shipment of Waste Material. However, the notification of shipments shall not apply to any such off-site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

2. The notification shall be in writing, and shall include the following information: (a) the name and location of the facility to which the Waste Material is to be shipped; (b) the type and quantity of the Waste Material to be shipped; (c) the expected schedule for the shipment of the Waste Material; and (d) the method of transportation. Beazer shall notify the receiving state of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

3. The identity of the receiving facility and state will be determined by Beazer following the award of the contract for Remedial Action. Beazer shall provide to EPA all relevant information, including information under the categories noted in Paragraph E.2, above, on the off-site shipments ten (10) days prior to the shipment of the Waste Material.

XI. REPORTING AND APPROVAL/DISAPPROVAL

A. Monthly Progress Reports

1. Commencing with the effective date of this Decree, Beazer shall provide written progress reports to EPA on a monthly basis. These progress reports shall describe the actions that have been taken toward achieving compliance with this Decree, including a general description of Work activities commenced or completed during the reporting period, all data received during the reporting period, Work activities projected to be commenced or completed during the next reporting period, an agenda for the next Project Coordinators' meeting, and any problems including construction, procurement and, notwithstanding, all other problems with Work activities that have been encountered or are anticipated by Beazer in commencing or completing the Work. These progress reports are to be submitted to EPA by the 10th of each month for Work done the preceding month and planned for the current month and shall continue until EPA's issuance of the Certification of Completion of the Work pursuant to Section XVI. The first monthly progress report shall be submitted on the tenth (10th) day of the month following entry of this Decree.

2. If a progress report submitted by Beazer is deficient, EPA will notify the Beazer in writing within fifteen (15) days of receipt of the report. The notice shall include a description of all the deficiencies.

3. Within ten (10) days of receipt by Beazer of a notice of deficiency of a progress report, Beazer shall revise the report in response to EPA's comments and resubmit the report to EPA.

4. If a resubmitted progress report is deficient, or if Beazer fails to submit a monthly progress report in accordance with the schedule set forth above, Beazer shall be subject to stipulated penalties under Section XXIV of this Decree.

B. Reports, Plans and Other Items

1. Any reports, plans, specifications, schedules, appendices, and attachments (other items) required by this Decree are, upon approval by EPA, incorporated into this Decree. Beazer shall furnish copies of all reports, plans, and other items required by this Decree pursuant to the notice provisions of this Decree.

2. Upon receipt, EPA shall review all draft reports, plans or other items, submitted by Beazer pursuant to this Decree, and within the time frame specified in the SOW shall where applicable either approve or disapprove the report, plan or other item. Any disapproval shall include an explanation of why the report, plan or other item is being disapproved.

3. Beazer shall respond to any deficiencies and resubmit the report, plan or other item to EPA for approval within the time frame specified in the SOW.

4. Upon receipt of the revised draft, EPA shall review the revised report, plan or other item and where applicable either approve or disapprove the report, plan or other item. If the revised report, plan or other item is disapproved, Beazer shall respond to any deficiencies and resubmit the report, plan or other item to EPA for approval.

5. If any report, plan or other item is deficient after this resubmission, then Beazer shall be deemed out of compliance with this Decree and shall be subject to stipulated

penalties. Any such non-compliance with which Beazer disagrees shall be subject to dispute resolution.

6. Any document resubmitted to EPA with any changes shall be resubmitted with the changes clearly marked. Upon approval, Beazer shall submit unmarked copies of the final documents to those persons listed in the Notice provisions of this Decree.

XII. HEALTH AND SAFETY AND CONTINGENCY PLAN

Prior to commencing any activities on the Site required by this Decree, Beazer shall submit a Health and Safety Plan (including the Contingency Plan) which shall address both the safety of workers at the Site and prevention and minimization of public exposure to releases or spills at or from the Site. The Health and Safety Plan shall be prepared in conformance with OSHA requirements including those regulations at 54 Fed. Reg. 9294, and EPA's Standard Operating Safety Guides.

XIII. QUALITY ASSURANCE/QUALITY CONTROL

A. Beazer shall submit to EPA for approval as part of the Remedial Design Work Plan and the Remedial Action Plan a Remedial Design Quality Assurance/Project Plan (RD QAPP) and a Construction Quality Assurance Project Plan (CQAPP). The RD QAPP and CQAPP shall, where applicable, be prepared in accordance with Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans, QAMS-005/80, and any subsequently issued EPA guidance. The CQAPP shall include a description of the mechanism used to verify that the soil washing system and the ground water treatment system are operating within acceptable limits. Upon approval and notice by EPA to Beazer, Beazer shall implement and comply with the Plans.

B. Beazer shall use quality assurance and quality control (QA/QC) procedures in accordance with the RD QAPP and CQAPP submitted pursuant to this Decree, and shall utilize standard EPA chain of custody procedures, as documented in National Enforcement Investigations Center Policies and Procedures Manual as revised in May 1986 and the National Enforcement Investigations Center Manual for the Evidence Audit published in September 1981, for all sample collection and analysis activities. In order to provide quality assurance and maintain quality control regarding all samples collected pursuant to this Decree, Beazer shall:

1. Require that all contracts with laboratories utilized by Beazer for analysis of samples taken pursuant to this Decree provide for access of EPA personnel and EPA authorized representatives to assure the accuracy of laboratory results related to the Work.

2. Require that laboratories utilized by Beazer for analysis of samples taken pursuant to this Decree perform all analyses according to EPA methods or other methods deemed satisfactory to EPA. Accepted EPA methods are documented in the "Contract Lab Program Statement of Work for Inorganic Analysis" and the "Contract Lab Program Statement of Work for Organic Analysis" dated July 1985. Additionally, laboratories utilized by Beazer shall perform all relevant analysis in accordance with Contract Lab Program (CLP) protocol.

3. Require that all laboratories utilized by Beazer for analysis of samples taken pursuant to this Decree participate in an EPA or EPA equivalent QA/QC program. As part of the QA/QC program and upon request by EPA, such laboratories shall perform at no expense to the United States analyses of samples provided by EPA to demonstrate the quality of each laboratory's data. EPA may provide to each laboratory a maximum of four samples per year per

analytical combination (e.g., four aqueous samples for analysis by gas chromatography/mass spectrometry, four soil/sediment samples for analysis by gas chromatography/mass spectrometry).

XIV. PROJECT COORDINATORS

A. Within ten (10) days of the effective date of this Decree, EPA and Beazer shall each designate a Project Coordinator to oversee implementation of the Decree and to coordinate communication between EPA and Beazer. Beazer's Project Coordinator shall be responsible for directing and supervising Beazer's performance of the Work under this Decree. The absence of either Project Coordinator from the Site shall not be cause for stoppage of work.

B. The EPA Project Coordinator shall have authority vested in the Remedial Project Manager and the On-Scene Coordinator by 40 C.F.R. Part 300, as well as the authority to ensure that the Work is performed in accordance with all applicable statutes, regulations, and this Decree. The EPA Project Coordinator has the authority to require a cessation of the performance of the Work or any other activity at the Site that, in his or her opinion, may present or contribute to an imminent and substantial endangerment to public health, welfare, or the environment because of an actual or threatened release of hazardous substances from the Site. As soon as possible after the EPA Project Coordinator issues an oral order to halt Work, EPA shall orally notify the persons listed in Section XXVII., and provide an explanation of the basis for such order. As soon as possible, but in no event more than fourteen (14) days after the initial order to halt Work, a written explanation of the basis for such order to halt Work shall be provided to those persons specified in Section XXVII. In the event the EPA Project Coordinator suspends the Work or any other activity at the Site, the EPA Project Coordinator has the authority to and shall extend affected schedules under this Decree for a period of time equal to

that of the suspension of the Work or other activities plus reasonable additional time for resumption of activities, unless the imminent and substantial endangerment described in paragraph B(1) above is caused by Beazer or its contractor's non-compliance with this Decree, then any extension of the compliance deadlines shall be at EPA's sole discretion. Any extensions in the schedules set out in this Decree or its attachments must be made by EPA in writing.

C. During the performance of the Work under this Decree, monthly meetings shall be held between the Project Coordinators regarding the progress and details of the work and to review and resolve any discrepancies in data as they deem appropriate under the circumstances. Such meetings shall be held at least five days after receipt of the agenda contained in the monthly report required by Section XI.A. The Project Coordinators may agree in writing to meet less frequently.

D. The Project Coordinators do not have the authority to modify in any way the terms of this Decree. However, the EPA Project Coordinator may make decisions concerning whether field activities are in compliance with this Decree, and such determinations shall be documented in writing.

E. EPA and Beazer may change their respective Project Coordinators. When possible, the other Party shall be notified at least seven (7) days prior to the change, but in no event later than 14 days after such change.

F. The Project Coordinators may assign other representatives, including contractors or other employees, to serve as a Site Representative for oversight of performance of daily operations during the Work. The Project Coordinators may delegate on a temporary basis their responsibilities and shall notify the other party's Project Coordinator orally or in writing of such

delegation, except that the EPA Project Coordinator may not delegate his or her responsibility concerning the modification of any schedule or the authority to order a cessation of the Work to anyone other than an EPA employee.

G. The Project Coordinators may, by written agreement, change the schedule for work to be performed.

XV. SITE ACCESS

A. During the effective period of this Decree, the United States and its representatives, including EPA and their contractors, and the State of Texas shall have access at all times to the Site and any property to which access is required for the implementation of this Decree or to conduct actions authorized under CERCLA, to the extent access to the property is controlled by or available to Beazer, for the purposes of conducting any activity authorized by CERCLA or this Decree, including, but not limited to:

1. Monitoring the progress of the Work taking place at the Site;

2. Verifying any data or information submitted to the United States with respect to the Work at the Site;

3. Conducting investigations relating to contamination at or near the Site;

4. Obtaining samples at the Site;

5. Inspecting and copying records, operating logs, contracts, or other documents pertaining to the Work on the site maintained or generated by Beazer or its agents; or

6. Assessing Beazer's compliance with this Decree.

B. To the extent that the Site or any other area where work is to be performed under this Decree is owned or controlled by persons other than Beazer, Beazer shall use best efforts to

secure from such persons access for Beazer, as well as for the United States and its representatives, including EPA and their contractors, as necessary to effectuate this Decree. If any access required to complete this Decree is not obtained within thirty (30) days of the date of entry of this Decree, or at least 30 days before the date access is required to conduct Work pursuant to this Decree, Beazer shall promptly notify the United States regarding the lack of access and the efforts of Beazer to obtain such access. The United States may thereafter assist Beazer in obtaining access. Beazer shall reimburse the United States in accordance with the procedures in Section XX for all costs incurred, including but not limited to, attorneys fees and the amount of just compensation costs incurred by the United States in obtaining access.

C. Notwithstanding any provision of this Decree, the United States retains all of its access authorities and rights under applicable statute or regulations or permits.

D. Such right of access shall in no way be deemed an easement or property interest of the United States in the Site.

E. Beazer shall record, subject to EPA review and approval, an appropriate notice of this Decree in the deed registry office or in the office where the existence of this Decree would be identified during any title search of the property.

XVI. CERTIFICATION OF COMPLETION

A. Within 20 days after Beazer concludes that the Remedial Action has been fully performed, Beazer shall so notify the United States, and shall schedule and conduct a prefinal construction conference and inspection to be attended by Beazer, EPA, and the State. Within 30 days of the prefinal inspection Beazer shall submit a prefinal inspection report which outlines the

outstanding construction items, actions required to resolve these items, a completion date for these items, and a date for the final inspection.

B. Upon completion of any outstanding construction items, Beazer shall schedule and conduct a final inspection to be attended by Beazer, EPA, and the State for the purpose of verifying the resolution of the outstanding construction items identified in the prefinal inspection. If any items remain unresolved, this inspection shall be considered a prefinal inspection requiring another prefinal inspection report.

C. Within 90 days of the final inspection, Beazer shall submit a Remedial Action Report which shall include, at a minimum, the following elements:

1. A brief description of outstanding construction items from the prefinal inspection and an indication that the items were resolved,
2 A synopsis of the work defined in the Remedial Design Documents and the RAP and a certification that this work was performed,
3. An explanation of any modifications to the Work, and why these were necessary for the project,
4. Certification that the remedy is operational and functional, and
5. Any documentation necessary to support items 1 through 4 above.

Within 90 days of EPA's receipt of the Remedial Action Report, EPA shall approve or disapprove with comments the Remedial Action Report. Upon Beazer's satisfactory resolution of EPA's comments on the Remedial Action Report, EPA's Regional Administrator shall provide a written Certification of Completion to Beazer representing EPA'a acceptance of the completed project.

XVII. SUBMISSION OF DOCUMENTS, SAMPLING, AND ANALYSIS

A. Subject to the confidentiality provisions set forth below, any analytical or design data generated or obtained by Beazer pursuant to the requirements of this Decree shall be provided to EPA within fifteen (15) days of receipt of a written request from EPA for such data or such other period as may be mutually agreed upon in writing.

B. EPA employees and EPA's authorized representatives shall have the right to take split samples of any samples obtained by Beazer or its representatives at the Site during implementation of the Work and EPA shall upon written request provide the verified analytical results therefrom to Beazer within twenty (20) days of receipt of the results or within twenty (20) days of the receipt of the request, whichever is later.

C. During implementation of the Remedial Action, Beazer shall give EPA prior written notice of any compliance sampling required by the RAP in accordance with the approved Sampling and Analysis Plan. All samples shall be handled in accordance with the approved QA/QC Plans.

D. All data and documents submitted by Beazer to EPA pursuant to this Decree shall be subject to public inspection unless Beazer asserts a claim that such documents are or contain trade secrets or confidential business information or are legally privileged from disclosure. Beazer must identify by author, title and date all such documents for which it asserts a claim of privilege or confidentiality. Beazer shall have the burden of demonstrating such confidentiality or privilege exists. Beazer shall not assert a claim of confidentiality regarding any hydrogeological or chemical data or any data submitted in support of the Remedial Action Plan. Beazer may assert a claim of business confidentiality in accordance with 40 CFR Part 2 and

Section 104(e)(7) of CERCLA, for any process, method or technique or any description thereof that Beazer claims constitutes proprietary or trade secret information developed by Beazer or developed by the Contractor(s) or the Contractor's subcontractors.

XVIII. RETENTION OF RECORDS

Beazer shall preserve and retain, and shall require all contractors, subcontractors and agents acting on Beazer's behalf to preserve and retain the originals or a true copy of all records and documents of whatever kind, nature or description which are required to be generated hereunder that relate to the performance of the Work under this Decree. Such records and documents shall be retained for five (5) years after the termination of this Decree. Upon termination of this Decree, copies of all such records, documents, and information shall be delivered to the EPA Project Coordinator upon his or her written request. Prior to the destruction of any records and documents related to the Work, Beazer shall provide ninety (90) days prior notice in writing to EPA and shall upon request of EPA provide either the originals or true copies of such records and documents.

XIX. RESPONSE AUTHORITY

Except as provided in Sections XXV and XXVI, herein, nothing in this Decree shall be deemed to limit any authority of the United States or this Court to take, direct, or order all appropriate action to protect human health and the environment or to prevent, abate, or minimize an actual or threatened release of Waste Material on, at, or from the Site.

XX. REIMBURSEMENT OF RESPONSE COSTS

A. Within thirty (30) days of the entry of this Decree, Beazer shall reimburse the United States for $500,000 in Past Response Costs and Oversight Response Costs as provided in this Decree. This payment by Beazer is not a penalty, fine or monetary sanction of any kind, but is reimbursement to the United States and is in full satisfaction of its claims for all costs incurred by the United States relating to the site through May 31, 1989.

B. All payments to the United States pursuant to this Decree shall be in the form of a certified check or checks made payable to "EPA Hazardous Substances Superfund," and referencing CERCLA Number 56 and DOJ Case Number 90-11-2-535. The certified check(s) shall be forwarded to:

U.S. Environmental Protection Agency
Superfund - South Cavalcade Site - Region 6
P.O. Box 360582M
Pittsburgh, Pennsylvania 15251

Attn: Superfund Accounting

C. The United States has continued and will continue to incur costs at the Site after May 31, 1989, for enforcement and response costs associated with this Decree. Beazer shall reimburse the United States for all such costs incurred by the United States which are not inconsistent with the NCP. The United States shall send Beazer a demand for payment on or about July 31st of each year during the life of the Decree by certified mail return receipt requested. The first demand for payment shall include all costs incurred since May 31, 1989. With each demand for payment, EPA shall provide the supporting cost documentation which it maintains in its normal and ordinary course of business in accordance with its internal cost

documentation procedures. At present those cost documentation procedures are set forth in the Financial Management Procedures for Documenting Superfund Costs, September 1986, at pp. III-21-24. Further, each demand for payment shall also include an estimate of oversight costs for the next year.

Payments shall be made in the manner described in Section XX.B within sixty (60) days of Beazer's receipt of each demand for payment, unless the dispute resolution provisions of this Decree are invoked with respect to any demand for payment of costs under this section, in which case payment shall be due thirty (30) days after resolution of the dispute.

D. Copies of check(s) paid pursuant to Section XX.B and any accompanying transmittal letter(s), shall be sent to the United States at the address in Section XXVII.

E. In the event that the payments required by Section XX.A. and C. are not timely made, Beazer shall pay interest on the unpaid balance at the rate established by the Department of the Treasury pursuant to 31 U.S.C. § 3717 and 4 C.F.R. 102.13.

XXI. COVENANTS NOT TO SUE

A. Except as expressly provided herein, the United States hereby covenants not to sue, not to take any administrative action, and not to execute judgment against Beazer for any and all civil obligations or liability, including future liability, to the United States for any causes of action arising under CERCLA Sections 106 and 107, 42 U.S.C. §9606 and 9607 for claims arising from or related to releases or threatened releases of hazardous substances from the Site which are addressed by the Work or cost reimbursement in this Decree. With respect to future liability this covenant not to sue shall take effect upon issuance of the Certification of Completion

for the Remedial Action, except that this covenant not to sue for the Operation & Maintenance shall not take effect until completion of the Operation & Maintenance.

B. Beazer hereby covenants not to sue the United States, including any and all departments, agencies, officers, administrators, and representatives thereof, for any cause of action arising under CERCLA Sections 106 and 107, 42 U.S.C. § 9606 and 9607 for claims arising from or related to releases or threatened releases of hazardous substances from the Site which are addressed by the Work or cost reimbursement in this Decree.

C. The provisions of Paragraphs A and B of this Section shall not apply to the following claims:

1. Claims based on a failure of Beazer to comply with this Decree;

2. Claims for costs incurred by the United States as a result of the failure of Beazer to fulfill the requirements of Section VII of the Decree;

3. Claims based on criminal liability;

4. Claims based on liability for hazardous substances removed from the Site by any Party; or

5. Claims based on future monitoring or oversight expenses incurred by the United States except as those costs are recovered by the United States pursuant to Section XX, Response Cost Reimbursement.

D. Notwithstanding any other provision of this Decree, the United States reserves the right to: (1) take appropriate response or enforcement action in this proceeding; (2) institute a new action to seek additional removal or remedial measures at the Site beyond the scope of this

Decree through an action to compel Beazer to perform removal or remedial work or (3) institute an action to compel Beazer to reimburse the United States or the State for response costs if:

1. For proceedings prior to EPA certification of completion of the Remedial Action:

a. conditions at the Site (including the release or threat of release of hazardous substances), previously unknown to the United States are discovered after the entry of this Decree; or

b. information is received, in whole or in part, after the date of the entry of this Decree,

and these previously unknown conditions or this information indicates that the Remedial Action is not protective of human health and the environment;

2. For proceedings subsequent to EPA certification of completion of the Remedial Action:

a. conditions at the Site previously unknown to the United States are discovered after certification of completion by EPA, or

b. information is received, in whole or in part, after the certification of completion by EPA,

and these previously unknown conditions or this information indicates that the Remedial Action is not protective of human health and the environment.

3. For the purpose of this Section, those matters contained in or referred to in the ROD and the Administrative Record referenced therein shall be deemed to be conditions or information known to the United States.

XXII. PREAUTHORIZATION

Nothing in this Decree shall be deemed to constitute preauthorization of a claim against the Hazardous Substances Superfund. Beazer hereby waives all claims against the Hazardous Substances Fund for past costs related to the Site and costs incurred under this Decree.

XXIII. RESERVATION OF RIGHTS/RETENTION OF CLAIMS

A. This Decree does not constitute, and shall not be construed as, a covenant not to sue with respect to, or a release from any claim, cause of action, or demand in law or equity against any person, association, partnership or corporation not a Party to this Decree. The right to pursue such claims is expressly reserved.

B. Nothing in this Decree shall be deemed to limit the response authority of the United States. However, the United States may not utilize its response authority to obtain a result inconsistent with the exercise or result of Dispute Resolution under this Decree.

C. As long as Beazer is in compliance with this Decree, Beazer is entitled to contribution protection under Section 113(f)(2) of CERCLA and any other applicable rights to limit its liability to persons or entities not parties to this Decree with respect to matters covered by this Decree. For purposes of Section 113(f)(2) of CERCLA, "matters addressed in the settlement" include the Work, Past Response Costs and, if reimbursed by Beazer, Future Response Costs.

D. The entry of this Decree shall not be construed to be an acknowledgement by Beazer that the release or threatened release concerned constitutes an imminent and substantial endangerment to the public health or welfare or the environment. Except as otherwise provided

in the Federal Rules of Evidence, the participation by Beazer shall not be considered an admission of liability for any purpose, and the fact of such participation shall not be admissible in any judicial or administrative proceeding including a subsequent proceeding under this Section.

XXIV. STIPULATED PENALTIES

A. Subject to the Force Majeure and Dispute Resolution provisions in this Decree Beazer shall pay stipulated penalties as set forth below:

1. For each failure to submit an adequate monthly progress report, Beazer shall pay a stipulated penalty of $2,000. For each failure to submit a monthly progress report by the 10th day of the month in which it is due, Beazer shall pay a stipulated penalty of $1,000. For each failure to submit a monthly progress report at all, Beazer shall pay a stipulated penalty. of $10,000.

2. For each failure to cease activity when the EPA Project Coordinator orders a cessation or halt of activities in accordance with Section XIV., Beazer shall pay a stipulated penalty of $25,000 per day.

3. For each failure of a laboratory to retain samples in accordance with the CLP guidelines, Beazer shall pay a stipulated penalty of $1,500 for each sample.

4. For each failure to meet any requirement in this Decree (except for those activities covered in 1, 2 and 3 above), including but not limited to submittal of a late report, Beazer shall pay stipulated penalties in the amount set forth below for each day, or part thereof during which the violation continues:

Period of Failure to Comply	Penalty Per Violation Per Day
1st through 14th day	$ 1,000
15th through 30th day	$ 3,000
31st day through 45th day	$ 5,000
46th day through 59th day	$ 8,000
60th day and beyond	$10,000

B. Except as otherwise provided, stipulated penalties shall begin to accrue from the date of violation and run until the violation is corrected. EPA shall advise Beazer as soon as EPA has knowledge that a violation subject to stipulated penalties has occurred. Failure of EPA to advise Beazer in a timely manner shall not be a waiver of the stipulated penalties.

C. A single act or omission shall not be the basis for more than one type of stipulated penalty. However, a single act or omission which continues for more than one day may result in more than one day of stipulated penalties.

D. Payment of Stipulated Penalties

1. Stipulated penalties shall be paid by certified or cashier's check and shall be paid within thirty (30) days of receipt of a demand letter for payment sent by EPA or within thirty (30) days of final dispute resolution, whichever comes later.

2. During the pendency of any dispute resolution of this Decree, stipulated penalties shall continue to accrue, but the obligation to pay shall be stayed until the dispute is resolved. If Beazer is successful in any Dispute Resolution, Beazer shall have no liability to pay stipulated penalties or other sanctions with regard to the matter submitted for that specific Dispute Resolution.

3. The United States may, within its sole and nonreviewable discretion, waive imposition of all or any part of any stipulated penalties.

4. The check for stipulated penalties or any other payment due the United States pursuant to this Decree shall be made payable to the Hazardous Substance Superfund and sent to:

U. S. Environmental Protection Agency
Superfund - South Cavalcade Superfund Site, Region 6
P.O. Box 360582M
Pittsburgh, PA 15251
Attention: Superfund Accounting

A copy of the transmittal letter, which shall include a brief description of the violation and the check, shall be sent to EPA in accordance with the Notice provisions.

XXV. FORCE MAJEURE

A. "Force Majeure" for purposes of this Decree is defined as any event arising from causes beyond the control of Beazer, its contractors or subcontractors which cannot be prevented or mitigated by the exercise of due diligence or reasonable foresight and which delays or prevents the performance of any obligation under this Decree. "Force Majeure" shall not include increased costs or expenses of the Work, failure to timely apply for any required approvals or to provide all required information therefore in a timely manner, or insolvency or unwillingness to pay.

B. When circumstances are occurring or have occurred that delay the completion of any phase of the Work, whether or not due to a "Force Majeure" event, Beazer shall promptly, (in no event later than ten (10) days from the time Beazer obtains information indicating a delay has been or will be encountered) supply a written notice to EPA which includes a detailed

explanation of the reason(s) for and anticipated duration of any such delay; the measures taken and/or to be taken by Beazer to prevent or minimize the delay; and the timetable for implementation of such measures. Failure to notify in accordance with this Section shall constitute a waiver of any claim of "Force Majeure."

C. EPA will notify Beazer of its determination regarding the asserted claims of "Force Majeure." If the United States agrees that a delay is or was attributable to a "Force Majeure" event, the Parties shall modify the applicable schedule to provide such additional time as may be necessary to allow the completion of the specific phase of the Work and/or any succeeding phase of the Work affected by such delay, for a period equal to the actual duration of the delay plus reasonable additional time for the resumption of work. Changes in schedules and dates caused by invoking this Section or any other change in dates or schedules that are agreed by the Parties in writing do not require court approval as a modification of this Decree.

XXVI. DISPUTE RESOLUTION

A. In the event that the Parties cannot resolve any dispute arising under this Decree, then the position advanced by the United States shall be considered binding unless Beazer invokes the dispute resolution provisions of this Section. The Dispute Resolution section described herein shall be the sole mechanism for resolving disputes which may arise under this Decree.

B. Any dispute that arises with respect to the meaning or application of this Decree shall, in the first instance, be the subject of informal negotiations between the United States and Beazer. Beazer shall notify the United States of the invocation of this Section. Such period of informal negotiations shall not extend beyond thirty (30) days following written notice that the provisions of this Section have been invoked unless the parties agree otherwise.

C. If any dispute is not resolved during the informal negotiation period, the position advanced by the United States shall be considered binding unless within thirty (30) days Beazer files with this Court a petition which shall describe the nature of the dispute and include a proposal for its resolution. The filing of a petition asking the Court to resolve a dispute shall not postpone the deadline for Beazer to meet its obligations under this Decree not in or affected by the dispute or stay the accrual of stipulated penalties with respect to the disputed issue. Payment of stipulated penalties shall be stayed pending resolution of the dispute. In the event that the Court affirms the United States' position upon resolving the dispute, Beazer shall pay stipulated penalties for each day of noncompliance with this Decree beginning with the first day of noncompliance and including the period which the Dispute Resolution procedures were ongoing..

D. The United States shall have thirty (30) days to respond to the petition. Except as set forth below, in any dispute, Beazer shall have the burden based on the record of showing that EPA's position, including without limitation any interpretation of the terms and conditions of this Decree and of applicable federal and state law and regulations was arbitrary and capricious or otherwise not in accordance with law. In any dispute involving matters covered by Sections 113(j) or (k) of CERCLA, the Court shall apply the applicable standards and provisions of such subsections.

E. Unless otherwise specifically set forth herein, the failure to provide expressly for dispute resolution in any section of this Decree is not intended and shall not bar Beazer from invoking this Section as to any dispute arising under this Decree.

XXVII. FORM OF NOTICE

All notices required to be given pursuant to this Decree shall be in writing, unless otherwise expressly authorized. Notices or submissions required by this Decree shall be deemed timely if deposited with the United States Postal Service or an equivalent delivery service on or before the due date. Response times under this Decree shall run from the date of receipt. Documents, including reports, approvals, and other correspondence, to be submitted pursuant to this Decree shall be sent by certified mail return receipt requested, express mail service or some equivalent delivery service providing proof of delivery to the following addresses or to such other addresses as the Parties hereafter may designate in writing:

As to the United States:

Chief
Environmental Enforcement Section
Environment and Natural Resources Division
Department of Justice
10th and Pennsylvania Avenue, N.W.
Washington, D.C. 20530

and

Office of Regional Counsel (6C-H)
CERCLA South Cavalcade Site
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

and

Chief, Superfund Enforcement Branch
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

and

EPA Project Coordinator
South Cavalcade Superfund Site
Superfund TX Section (6H-ET)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202-2733

As to Beazer:

Billie S. Nolan
Law Department
Beazer East, Inc.
436 Seventh Avenue
Pittsburgh, Pennsylvania 15219

Shannon Craig
Beazer East, Inc.
436 Seventh Avenue
Pittsburgh, Pennsylvania 15219

As to the State:

South Cavalcade Superfund
Site Coordinator
Superfund Section
Texas Water Commission
Capitol Station
1700 North Congress
Austin, Texas 78711

XXVIII. MODIFICATION

Except as provided for herein, there shall be no modification of this Decree without written approval of all Parties to this Decree and filing of such modification with the Court or by order of the Court.

XXIX. ADMISSIBILITY OF DATA

No Party shall have the right to object to the admissibility into evidence of analytical data that it gathers and generates on the grounds of hearsay or on the grounds of its own failure to maintain chain of custody. No Party shall have the right to object to the admissibility of analytical data sought to be introduced by another Party if the appropriate procedures delineated in Section XIII were followed with respect to such data and for the purpose of seeking the admission of such analytical data into evidence each Party may demonstrate compliance with the appropriate procedure through one summary witness per laboratory.

XXX. INDEMNIFICATION

Beazer agrees to indemnify, save and hold harmless the United States from any and all claims or causes of action arising from acts or omissions of Beazer, its officers, employees, agents, receivers, trustees, successors, assigns, contractors, subcontractors, or any other persons acting on its behalf in carrying out activities pursuant to the terms of this Decree. Provided, however, that the foregoing indemnity shall not be applicable to matters arising from negligent acts or omissions or willful misconduct of the United States of its officers, employees, agents, contractors, subcontractors, or any other person acting on its behalf. Neither Beazer nor its contractors shall be considered an agent of the United States.

XXXI. LIABILITY

The United States shall not be liable for any injuries or damages to persons or property resulting from acts or omissions of Beazer, its officers, employees, agents, successors, assigns, contractors, subcontractors or any other persons acting on its behalf in carrying out any activities pursuant to the terms of this Decree.

XXXII. RETENTION OF JURISDICTION

This Court specifically retains jurisdiction over both the subject matter and the Parties to this action for the duration of this Consent Decree for the purpose of issuing such further orders or directions as may be necessary or appropriate to construe, implement, modify, enforce, terminate, or reinstate the terms of this Consent Decree or for any further relief as the interest of justice may require.

XXXIII. TERMINATION AND SATISFACTION

The provisions of this Decree shall be deemed satisfied, and the Court shall terminate this Decree upon the Court's receipt of written notice from EPA that Beazer has demonstrated that all of the terms of this Decree have been completed.

XXXIV. LODGING AND PUBLIC COMMENT

Beazer hereto stipulates and agrees that entry of this Decree is subject to the public comment requirements of Section 122(d)(2) of CERCLA.

XXXV. ASSURANCE OF ABILITY TO COMPLETE WORK

Beazer has demonstrated its ability to complete the Work and to pay all claims that arise from the performance of the Work through the submission of financial information sufficient to demonstrate to Plaintiff's satisfaction that Beazer has enough net assets to complete the Work to make it unnecessary to require additional financial assurances. Beazer shall submit independent audited financial statements containing such information annually, on the anniversary of the effective date of this Decree. Should such submittal demonstrate that Beazer's total shareholder equity is not less than $200,000,000.00, such submittal shall be deemed sufficient to demonstrate to Plaintiff's satisfaction that Beazer has enough net assets to complete the Work

to make it unnecessary to require additional financial assurances. In the event that Shareholder's equity is less than $200,000,000.00, Beazer shall, within thirty (30) days of receipt of notice of Plaintiff's determination, obtain and present to EPA for approval one of the following: (a) performance bond; (b) letter of credit or (c) guarantee by a third party in an amount not to exceed the estimated cost of the remaining Work. Beazer's inability to demonstrate financial ability to complete the Work shall not excuse non-performance of the terms and conditions of this Decree or any term thereof.

XXXVI. FINANCIAL RESPONSIBILITY

A. Anything herein notwithstanding, in no event shall Beazer be relieved of its ultimate responsibility to implement the Work under this Decree in a timely fashion by reason of any inability to obtain or failure to maintain in force any insurance policies, or by reason of any dispute between Beazer and any of its insurers pertaining to any claim arising out of the design, construction, implementation, or operation of the Remedial Action, or arising out of any other activity required under this Decree.

B. Beazer shall purchase and shall maintain in force or shall require its Contractor to purchase and maintain in force, insurance policies to protect against liability arising out of the acts or omissions of their contractors or any subcontractors, agent or employee retained to perform the Work. Said policy shall be an occurrence type policy and shall provide coverage in amounts not less than those specified below:

(1) Workmen's Compensation and Employer Liability Insurance in accordance with the Laws of the State of Texas, and

(2) Comprehensive General Liability Insurance, including contractual liability and automobile coverage, in the amount of $5,000,000.00 per occurrence combined single limit.

All policies of insurance shall provide that both Beazer and the Contractor are insured under the policy with respect to Work performed at the Site. No later than ten (10) days prior to the commencement of the Work Beazer or its Contractor, shall provide the United States with copies of the policies of insurance. Such insurance shall be maintained in effect for a period of three years from completion of the Work. To the extent that the insurance is maintained by the Contractor, the three year period shall expire three years after the Contractor completes performance of onsite remedial activities.

C. In the event that the Contractor is unable to obtain an occurrence type policy after making a good faith effort, Beazer shall require the Contractor to purchase and maintain in force a claims made policy of the parameters set forth in B above.

XXXVII. EFFECTIVE DATE

This Decree is effective upon the date of its entry by the Court.

XXXVIII. SIGNATORIES

A. Each undersigned representative of Beazer and the Assistant Attorney General for Environment and Natural Resources of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Decree and to execute and legally bind such party to this document.

B. Beazer shall identify, on the attached signature page, the name and address of an agent who is authorized to accept service of process by mail on behalf of that party with respect

to all matters arising under or relating to this Decree. Beazer hereby agrees to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure, including service of a summons, and any applicable local rules of this Court.

SIGNED ~~AND ENTERED~~ this THIS IS A FINAL JUDGMENT 13th day of MARCH, 1991.

United States District Judge
Southern District of Texas

FOR THE UNITED STATES OF AMERICA

Date: 7/17/90

Richard B. Stewart
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

Date: 7/18/90

David Buente, Chief
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

Date: 7/7/90

Angela O'Connell
Trial Attorney
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

Date: 2/28/91

Assistant United States Attorney
Southern District of Texas
Federal Courthouse
515 Rusk Street, 5th Floor
Houston, Texas 77002

FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY

Robert E. Layton, Jr., P.E.
Regional Administrative, Region 6
U.S. Environmental Protection Agency
1445 Ross Ave.
Dallas, Texas 75202-2733

Date: _____

Marvin Benton
Assistant Regional Counsel
U.S. Environmental Protection Agency
Region 6
1445 Ross Ave.
Dallas, Texas 75202-2733

Date: 6/28/90

THE UNDERSIGNED DEFENDANT enters into this Decree in the matter of United States v. Beazer East, Inc., relating to the South Cavalcade Superfund Site.

FOR BEAZER EAST, INC.

R G Hamilton
Vice President

Date: June 11, 1990

Agent Authorized to Accept Service on Behalf of Above-signed Party:

Name: _____
Title: _____
Address: _____
_____
_____

APPENDIX C

DETAILED STATEMENT OF WORK FOR SOUTH CAVALCADE SITE

HOUSTON, TEXAS

PREPARED FOR

BEAZER EAST, INC.

BECHTEL ENVIRONMENTAL, INC. MAY 1990

SOUTH CAVALCADE SITE

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DETAILED STATEMENT OF WORK

REMEDIAL DESIGN DETAILED STATEMENT OF WORK

1.0 SITE DESCRIPTION

1.1 Site Location

The South Cavalcade site is located in the northern section of Houston, Texas. The site occupies approximately 66 acres forming a rectangular shaped area with the longest dimension oriented north to south. The eastern and western boundaries of the site are formed by railroad tracks owned by Houston Belt & Terminal (HB&T). The northern edge of the property is bounded by Cavalcade Street and the southern border runs along Collingsworth Street. (See Figure 1.1)

Within the site, the area consists of Transcon Lines in the northern end, a large undeveloped portion of land occupying the central region, and Merchants Fast Motor Lines and Palletized Trucking, Inc. in the southern end. The three businesses are all trucking companies which use this property for loading trucks.

1.2 Site History and Description

In 1910, the National Lumber and Creosoting Company acquired ownership of approximately 55 acres to build and operate a wood treating facility. National Lumber and Creosoting Company operated the site until 1938 when they were acquired by the Wood Preserving Corporation, a subsidiary of Koppers Company. The facilities on the site consisted of: Several buildings which housed wood treating processing equipment and offices; railroad tracks on the northern and southern ends; coal tar operations and storage tanks; extensive lumber storage yards and two wastewater spray ponds. Based on 1938 aerial photographs, processing operations, including treating cylinders, work tanks, drip tracks, and spray ponds, were conducted along the southern portions of the site while storage of treated and untreated lumber was in the northern and middle sections of the site.

In 1940, the Wood Preserving Corporation was merged into Koppers Company. In 1944, Koppers Company incorporated and became Koppers Company, Inc. Records indicate that the site was operated as a wood treating and coal tar distillation facility until November 1962, when the plant was dismantled and the property was sold to Merchants Fast Motor Lines, Inc.

On December 31, 1962, Merchants Fast Motor Lines sold the 55-acre tract to Mr. Gene Whitehead who also purchased an additional 12+ acres. Mr. Whitehead then subdivided the property and sold portions to the following current property owners:

Current Owner	Purchase Date	Acres
Meridian Transport Co.	1/21/65	24.5
(Merchants Fast Motor Lines)	4/2/69	8.5
Baptist Foundation of Texas (Leased to Transcon Lines)	11/6/69	22.5
Mr. Rex King	10/26/77	10.3

A survey was conducted in 1983 by Camp Dresser & McKee, Inc. (CDM) to evaluate the suitability of the site for use as a maintenance yard and transit station for the proposed METRO-Stage One, Regional Rail System (RRS). The survey included a preliminary evaluation of shallow soil and groundwater conditions, primarily located throughout the northern portion of the site, with limited analytical testing. Results from the study indicated the potential for localized areas of affected soils and groundwater.

As a result of this survey, the site was referred to the Texas Department of Water Resources (TDWR). On April 16, 1984, the TDWR recommended to the U. S. Environmental Protection Agency (EPA) Region VI that the South Cavalcade Site be placed on the updated National Priorities List (NPL). On March 28, 1985, Koppers Company, Inc., entered into an Administrative Order on Consent (AOC) with the U. S. Environmental Protection Agency, Region VI in which it agreed to conduct a Remedial Investigation/Feasibility Study (RI/FS).

In 1985, the RI/FS was initiated for the South Cavalcade site and completed in mid-1988. The Record of Decision (ROD) was signed by the EPA on September 26 of that same year.

There has been a change in the ownership of Koppers Company, Inc., during 1988. As of June 30, 1988, BNS Acquisitions, Inc. ("BNS Acquisitions"), a Delaware Corporation, and an indirect wholly-owned subsidiary of Beazer PLC, acquired indirectly more than 90% of the outstanding command stock of Koppers Company, Inc. ("Koppers"). On November 14, 1988, BNS Acquisitions acquired indirectly the balance of the common shares. On January 20, 1989, BNS Acquisitions merged into Koppers, and on January 26, 1989, the name of Koppers was changed to Beazer Materials and Services, Inc. ("BM&S"). On April 16, 1990, BM&S changed its name to Beazer East, Inc. (Beazer).

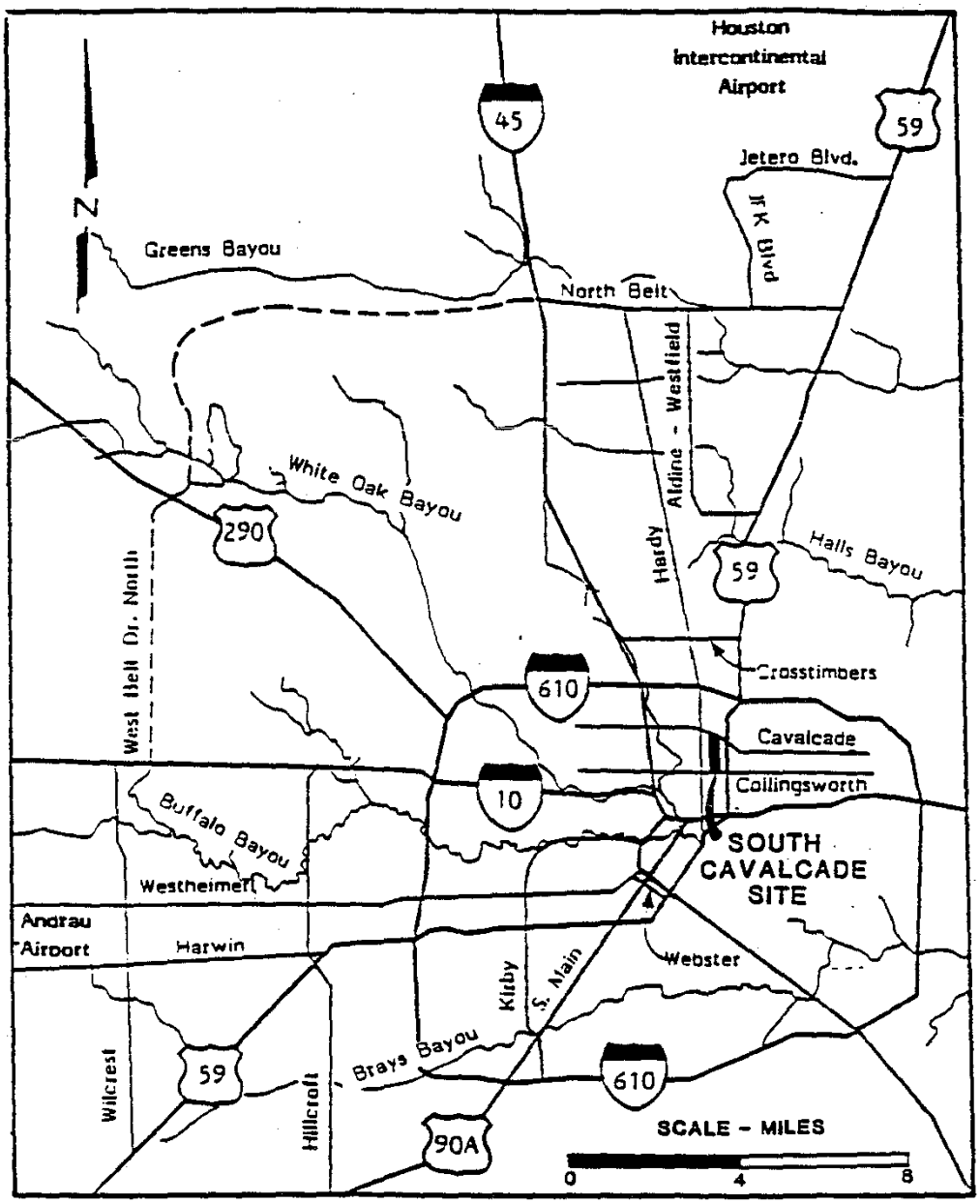


Fig. 1.1 Site Location Map

2.0 PURPOSE AND DESCRIPTION OF REMEDIAL ACTION

2.1 Nature and Extent of Problem

Current and past operations on this site have resulted in contamination of soils and the upper aquifer and intermediate discontinuous zone by polynuclear aromatic hydrocarbons (PAHs), metals, and volatile organic compounds (VOCs).

2.1.1 Soils

During the RI, four general areas were found to have elevated concentrations of residual organics (Figure 2.1). Further analytical testing revealed that PAH contamination in those areas was responsible for the high organic reading.

Since contamination was found in the surface (0 - 0.5 ft.) and surficial (0.5 - 6.0 ft.) soils, the top six feet of soil in the four areas may require remediation.

2.1.2 Groundwater

Groundwater sampling during the RI indicated contamination in the shallow aquifer (approximately 6 to 20 feet below grade). The majority of compounds found were PAHs. Elevated levels of these constituents were also found in the intermediate discontinuous sand lenses (approximately 50 feet below grade). Two areas of affected groundwater exist at the South Cavalcade site as defined in the RI; one in the southern portion and one in the northern portion of the site.

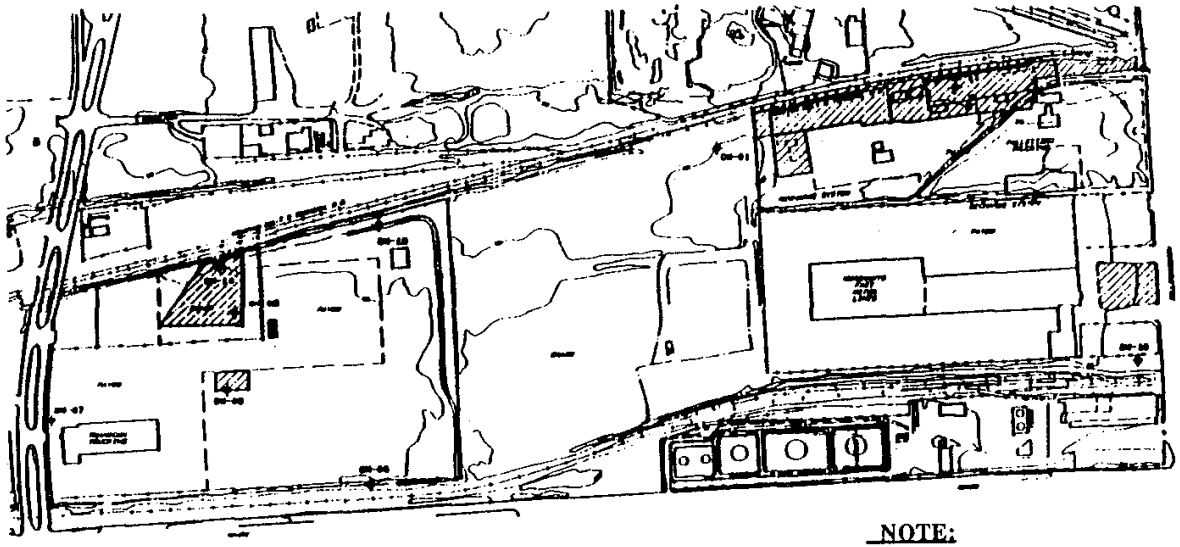
No detectable levels of any of these constituents were found in deep monitoring wells.

2.1.3 Air Quality

An air quality investigation found that air constituents at the site were well below the permissible levels established by EPA.

2.2 Remedial Action Selected

The ROD states that soil remediation using a combination of soil washing and in situ soil flushing, and groundwater remediation using physical/chemical separation followed by pressure filtration and activated carbon adsorption can best satisfy the statutory selection criteria.



Legend:

Approximate areas to be sampled

NOTE:
This map is intended to identify initial sampling areas for planning purposes. It should not be construed to restrict the areas to be sampled and/or remediated, which may increase or decrease based on sampling and analysis conducted during the Remedial Design.

Fig. 2.1 Areas to be tested for possible remediation

N.T.S.

During the design phase, sampling will be done to more fully define the areas to be remediated by soil washing and soil flushing. Soils from the area located in the southeast corner of the site will be excavated and washed until potentially carcinogenic PAHs concentrations fall below 700 ppm and the level of leaching of potentially carcinogenic PAHs into the groundwater does not exceed remedial goals identified in the ROD. Leaching potential will be determined by using the TCLP. The washed soils will then be returned to the previously excavated areas. These areas will then be capped for soil stability.

In the areas of the north and south ends of the site to be remediated by soil flushing, constituents will be flushed into the upper water bearing layer where they will be extracted with the groundwater. The remediation of these areas will be considered complete when it can be shown the soils contain less than 700 ppm total potentially carcinogenic PAHs and the leaching of potentially carcinogenic PAHs into the groundwater does not exceed remedial goals identified in the ROD.

Groundwater will be extracted from the upper aquifer and discontinuous zone, treated, and reinjected in a series of groundwater extraction lines and injection lines in the southern part of the site, and at least one extraction line and one injection line in the northern part. The extraction lines will be situated so that they intercept to the maximum extent possible the affected groundwater before it flows from the site. Treated water will be reinjected under an authorization to be granted by the Texas Water Commission (TWC). No listed waste will be reinjected.

Groundwater may need to be processed several times to recover and treat the non-aqueous phase. Groundwater collection will continue until the contaminants in the groundwater have been recovered to the maximum extent possible. This point will be determined during the RA based on annual sampling of the groundwater. Collection and treatment will continue until the EPA determines that sampling shows that the remedial goals shown in Appendix 1 have been met or that the RA has not provided statistically significant benefits to the groundwater for a period of three years. After this point has been reached, it will be assumed that the groundwater has been treated to the maximum extent possible. Modeling, such as the Vertical and Horizontal Spread (VHS) Model will be used to demonstrate whether any remaining constituents will affect the lower aquifer, and if not, they will be allowed to naturally attenuate to background levels. This modeling will be verified through groundwater monitoring.

Any NAPLs recovered will be recycled, reused, or thermally destroyed in a regulated facility (boiler, furnace, incinerator, etc.) offsite.

Additionally, the ROD allows for in situ biological treatment of soil and groundwater if it can be demonstrated and EPA determines that this process can be implemented and operated at an efficiency equal to or better than the method outlined above.

3.0 DESIGN CRITERIA

3.1 Sampling Plan and Analytical Methods for Determination of Extent of Soil Contamination Above Removal Standards

Objectives of Sampling and Analysis

To verify the extent of affected soils, the areas of surface soil staining identified during the RI, and delineated in the ROD, will be gridded and sampled. (See Figures 3.1 and 3.2.) The objective of this sampling is to delineate soils in these areas which exceed 700 ppm potentially carcinogenic PAHs or do not meet the no leaching potential goal.

Samples not showing obvious contamination will be tested for both health-based (carcinogenic PAHs > 700 ppm) and leaching potential criteria to determine if remedial action is required. Samples will be analyzed for base neutral compounds by standard CLP protocol. If they contain less than 700 ppm, the TCLP will be performed to determine their leaching potential. If either test shows the soil exceeds the remedial goals, the area will be marked for remediation. If the sample shows total carcinogenic PAHs level below 700 ppm and no leaching potential (as defined in Appendix 1), the grid point will be marked as "clean" and used to establish the boundary of areas to be remediated.

Sampling and Analytical Procedures

A 100-foot grid system will be established in the field to cover the potentially affected soil areas established in the ROD. The areas are shown in Figures 3.1 and 3.2.

Split spoon samples will be taken at two-foot intervals from bore holes drilled at these grid points. Sampling will include surface and surficial soils (0 - 6 ft.) above the groundwater level. Samples will be visually examined in the field for evidence of characteristic staining which may indicate contamination and tested by conducting headspace measurements using OVA and/or HNu instruments. If field observations show obvious contamination, the point will be marked for remediation and the next point will be sampled.

Samples not showing obvious contamination will be laboratory tested for base neutral compounds using standard CLP protocol to determine if they exceed the risk based criteria of 700 ppm total potentially carcinogenic PAHs. (See Appendix 1) Sample points which exceed this level will be marked for remediation and the contamination level recorded. If the sample shows total potentially carcinogenic PAHs level below 700 ppm, the TCLP test will be run on the sample (as defined in Appendix 1) to determine the leaching potential. If the sample shows no leaching potential, the grid point will be marked as "clean" and used to establish the boundary of areas to be remediated. If the sample fails the no leaching standard, additional sampling will be required to establish the boundary of areas to be remediated.

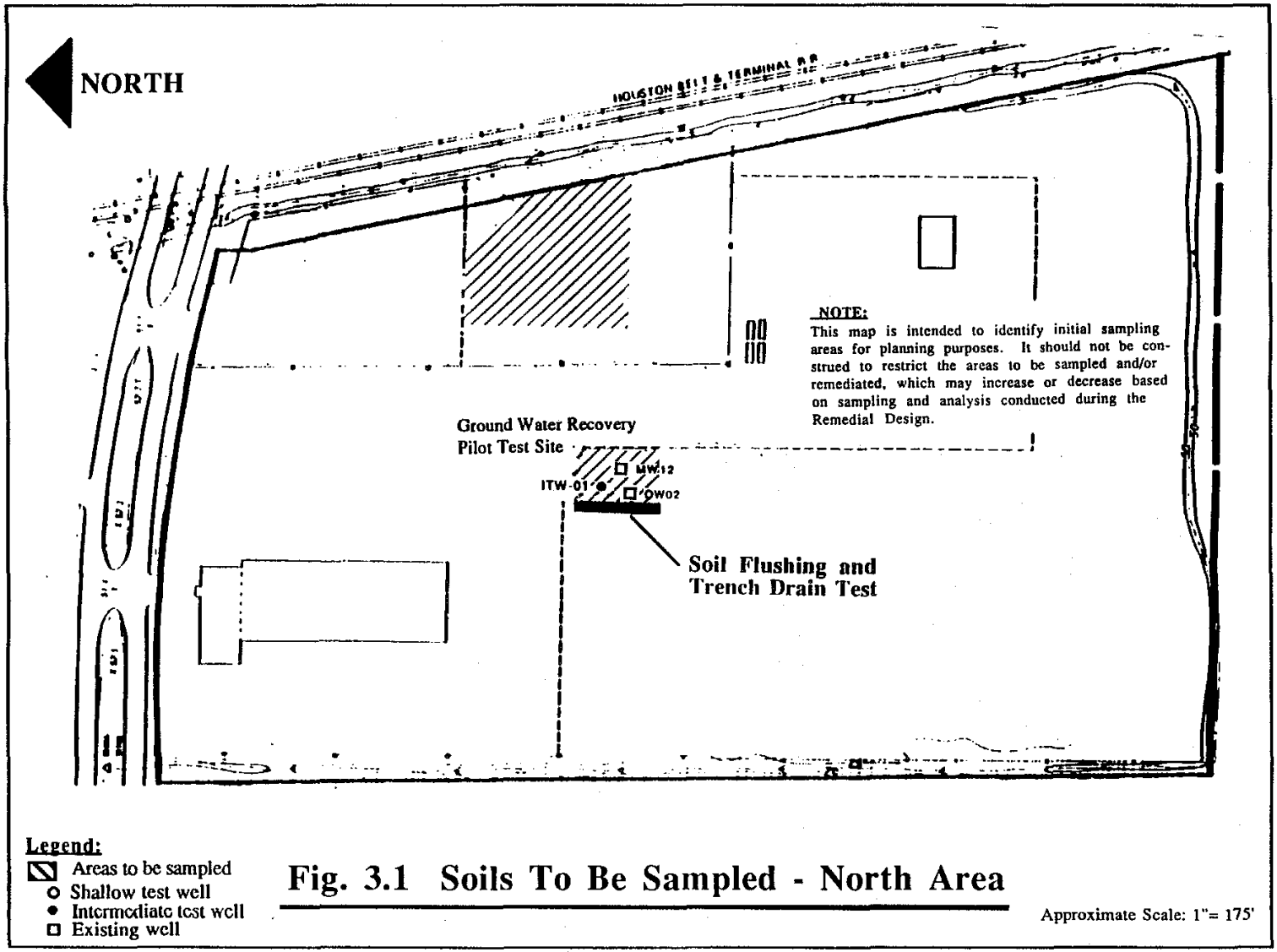


Fig. 3.1 Soils To Be Sampled - North Area

Approximate Scale: 1"= 175'

8

MAY 8, 1990

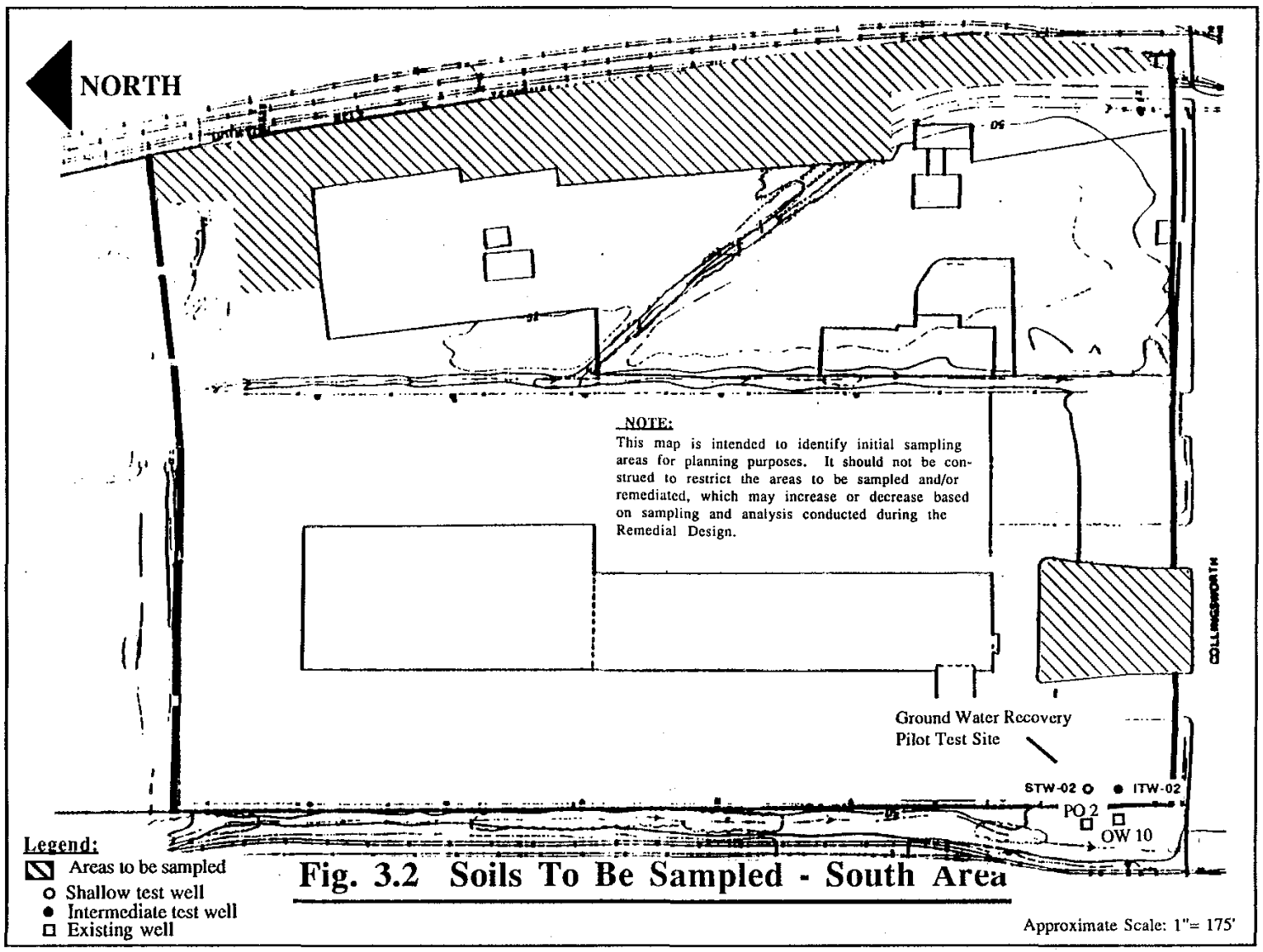


Fig. 3.2 Soils To Be Sampled - South Area

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In areas where the sampling indicates that the contamination is continuous, grid points may be skipped on the assumption that all surface and surficial (0 - 6 ft.) soil between the grids will require remediation. Sampling will continue until the boundary of the affected zones can be reliably established. These boundaries will be clearly marked and recorded and used to compute the volumes to be remediated.

Soil samples not sent for laboratory analysis will be retained on site until they can be properly disposed of during the remedial action. A log which includes time, conditions, and location of sampling will be maintained and will include records of all samples.

Sample collection, preservation, documentation, shipment, and analysis will be addressed in the appropriate sections of the Quality Assurance Project Plan (QAPP) and the Sampling and Analytical Plan. Chain of custody records will be maintained for all samples removed from site. Field operations will be carried out in accordance with the Health and Safety Plan. These project plans will be submitted for EPA review and approval prior to the initiation of the work outlined in the Consent Decree and this Statement of Work.

Confirmational sampling of excavated areas will be performed during the RA to verify that the remedial goals have been achieved.

3.2 Characterization of Volume and Quality of Recoverable Groundwater from Shallow and Upper Intermediate Aquifers

3.2.1 Test Well

Aquifer Characteristics

Aquifer characteristics are defined from data presented in the RI report.

- Shallow Aquifer
  This aquifer is continuous beneath the site. It is considered a water table aquifer (unconfined). Average depth to the top of the water bearing zone is 6 feet. Thickness of the water bearing zone ranges from 2 to 15 feet, averaging 10 feet. Hydraulic conductivity averages 8.3×10^{-4} cm/sec. Transmissivity is calculated to average 176 gpd/ft. Coefficient of storage is estimated to be 0.20. Flow direction is generally west with a gradient of 0.004 ft/ft. Potentiometric elevation ranges from +39 to +49 ft. msl.

- Upper Intermediate Aquifer
  This aquifer is discontinuous beneath the site. It is considered semi-confined, artesian. Average depth to the top of the water bearing zone is 42 feet. Thickness of the water bearing zone, where present beneath the site, ranges from 5 to 15 feet, averaging 10 feet. Hydraulic

conductivity averages 3.9 x 10^{-4} cm/sec. Transmissivity is calculated to average 72 gpd/ft. Coefficient of storage is estimated to be 0.002. Flow direction at the southern site border is generally northward and along the eastern site border generally westward. In the northern portion of the site, flow direction is not well defined. Gradients are quite variable due to the geometry of the aquifer but approximately range from 0.013 ft/ft to less than 0.003 ft/ft. Potentiometric elevation ranges from +33 to +43 feet msl.

Quantity of Recoverable Groundwater

The total recoverable volume of groundwater in the shallow and upper intermediate aquifers is estimated to be 50 million gallons. This is based on an average aquifer thickness of 10 feet, areal distribution of water in the shallow aquifer of 39.7 acres, in the upper intermediate aquifer of 45.8 acres, and an estimated specific yield of 0.20.

Groundwater Quality

In the RI, monitoring well SCK-MW07-001 was chosen as the location representative of background conditions for the shallow zone. This well is located off site in an area not currently or previously used for operations. Below are results from the analyses performed on well SCK-MW07-001 during the RI.

Alkalinity ($CaCO_3$)	
mg/l of pH = 4.5	530
mg/l of pH = 8.3	0.0
Ammonia (mg/l)	<1.00
Calcium (mg/l)	169
Chloride (mg/l)	15.9
Conductivity (mohms/cm)	870
Magnesium (mg/l)	40.1
Nitrate (mg/l)	<0.100
pH	6.9
Phenols (mg/l)	<0.005
Potassium (mg/l)	<5.0
Sodium (mg/l)	65
Sulfate (mg/l)	68.9
TDS (mg/l)	664
TOC (mg/l)	8.14
Copper (µg/l)	17
Chromium (µg/l)	30
Arsenic (µg/l)	55
Zinc (µg/l)	109
Lead (µg/l)	34

3.3 Performance of Groundwater Recovery Pilot Tests

Objective

The initial pump tests during the RI were not sufficient for the design of the extraction/injection system and for sizing the groundwater remediation system. Therefore, an additional extraction well pilot test will be performed to determine the characteristics of the shallow and upper intermediate aquifers.

A trench drain pilot test will also be done to test the feasibility of using this method to collect groundwater from the shallow aquifer during the soil flushing operation.

3.3.1 Number and Type of Tests and Test Well Location

Since well pump tests have been performed in the central area of the South Cavalcade site (See Figure 3.3) and data will be gathered from the trench drain pilot test to be performed in the shallow aquifer on the north end of the site, only one pumping test in the south zone will be needed to complete aquifer flow data for the shallow aquifer. The intermediate discontinuous zone will be pump tested by wells in both the north and south zones. The approximate location of the test wells will be as shown in Figures 3.1 and 3.2. The locations were chosen so that existing wells can be used as observation wells during the tests. The type of tests to be performed are drawdown/recovery. The pumping period will last at least 72 hours unless wells are pumped dry during this period. Pumping period may be extended to achieve a steady state condition in both flow rate and contaminant level.

3.3.2 Test Well Design

The test wells will be constructed of 4-inch diameter PVC riser pipe and screen, schedule 40 for the shallow well and schedule 80 for the deeper wells. The boring size for the shallow well will be 10 inches in diameter. The shallow well will be approximately 25 feet in depth with approximately 15 feet of 0.020 machine slotted screen placed in the entire water bearing strata of the shallow aquifer. The annular space between the well screen and the boring wall will be packed with a designed sand. A bentonite seal will be used above the gravel pack, and the remainder of the hole will be grouted to the surface with bentonite-cement grout.

One deeper test well will be constructed in the upper intermediate aquifer, approximately 20 feet from the shallow test well in the southern portion of the site. Another well or collection line will be constructed in the intermediate aquifer in the northern portion of the site. The initial bore hole diameter will be 16 inches. This hole will be advanced to at least 5 feet below the shallow aquifer. A 12-inch diameter PVC casing will be grouted in place with bentonite-cement grout sealing the hole from the shallow aquifer. After the grout has set, a 10-inch diameter hole will be advanced to the bottom of the upper intermediate aquifer (approximately 55 feet deep). The

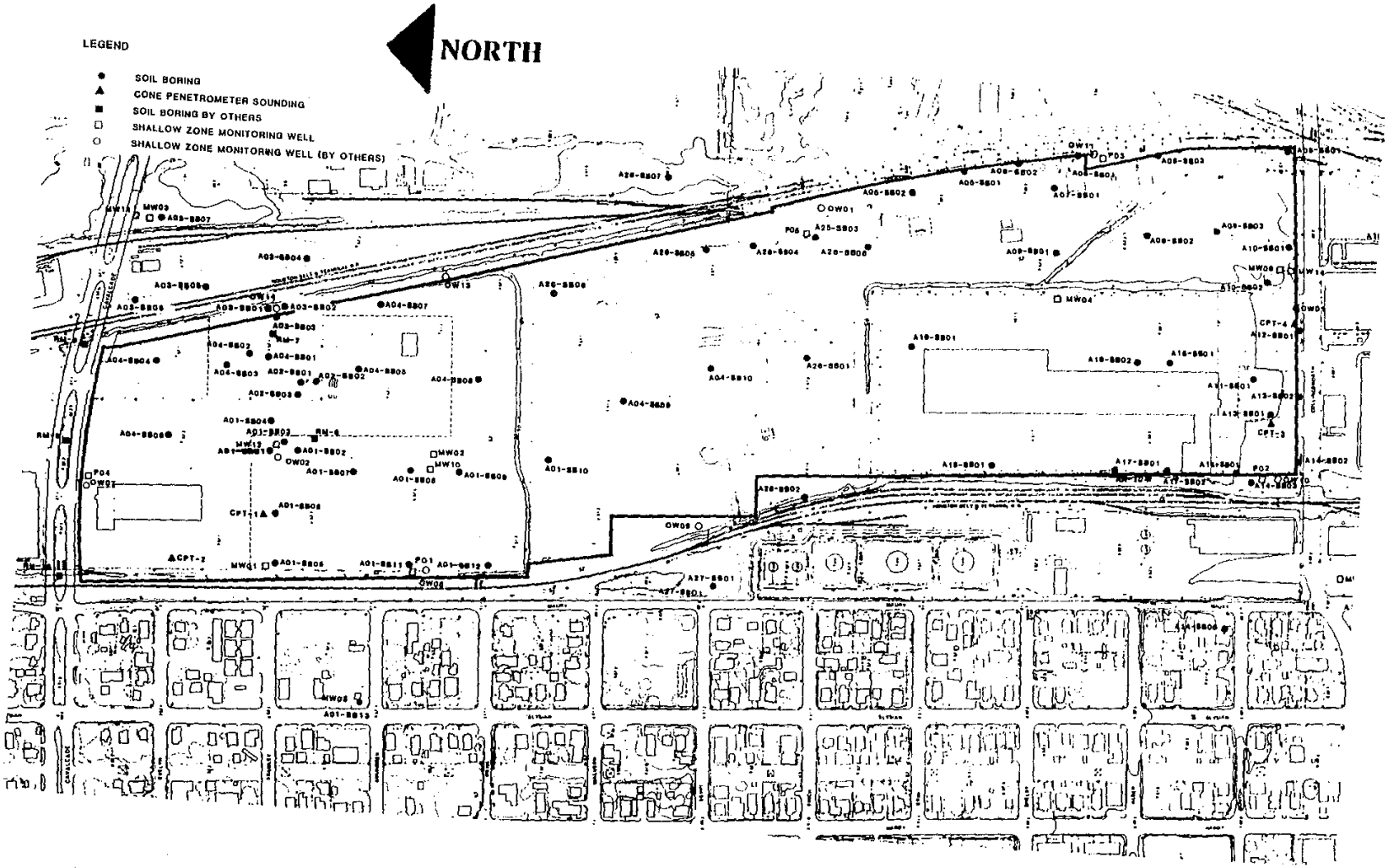


Fig 3.3 Existing Monitoring Wells

wells will be constructed in a manner similar to the shallow well, but in the upper intermediate aquifer. Schedule 80 PVC will be used to provide higher collapse strength.

These wells will be developed by surging until a stable condition is reached. Submersible pumps will then be installed for the pumping tests.

3.3.3 Extraction Well Testing

The pumping test using the shallow well will be conducted first. The test run will last 72 hours. Water level measurements will be made in all wells during that period. Water level observations will also be made in all wells during the 24-hour recovery period immediately after the pump is shut off. The pumping test in the deeper test wells will be conducted in a similar manner. Testing in the intermediate zone wells will not begin until water levels have stabilized for at least 24 hours after running the first test.

Aquifer characteristics (transmissivity and coefficient of storage) will be calculated from the data obtained during the pumping tests. All recovered groundwater will be stored in on-site tanks for subsequent treatment.

3.3.4 Trench Drain/Soil Flushing Pilot Test

The Trench Drain/Soil Flushing Pilot Test will be used to (1) test the use of this method to collect the flush water in areas slated for soil flushing; and (2) to test the efficiency of surfactants to remove potentially carcinogenic PAHs from the soil. Biological agents may also be added to the flush water (in lieu of surfactants) to evaluate the use of in-situ biological remediation of the soil as allowed in the ROD.

The test will utilize a 150-foot long section of trench excavated to the bottom of the shallow aquifer. The test trench will be located at the lower end of the groundwater gradient, along one side of the area slated for remediation by soil flushing (See Figure 3.1). Flush water will be introduced from surface ponded areas or perforated underground pipes.

3.3.5 Test Trench Drain Design

After the trench has been excavated, a 6-inch perforated PVC pipe, wrapped in geotextile, will be placed in the bottom and covered with 1 foot of gravel. The gravel will then be covered by a geotextile, and the trench will be backfilled using a mixture of bentonite clay and the soil excavated from the trench. A typical cross-section of the test trench is shown on Figure 3.4. The pipe will be sloped to drain into a manhole from which the collected water will be pumped for measurement.

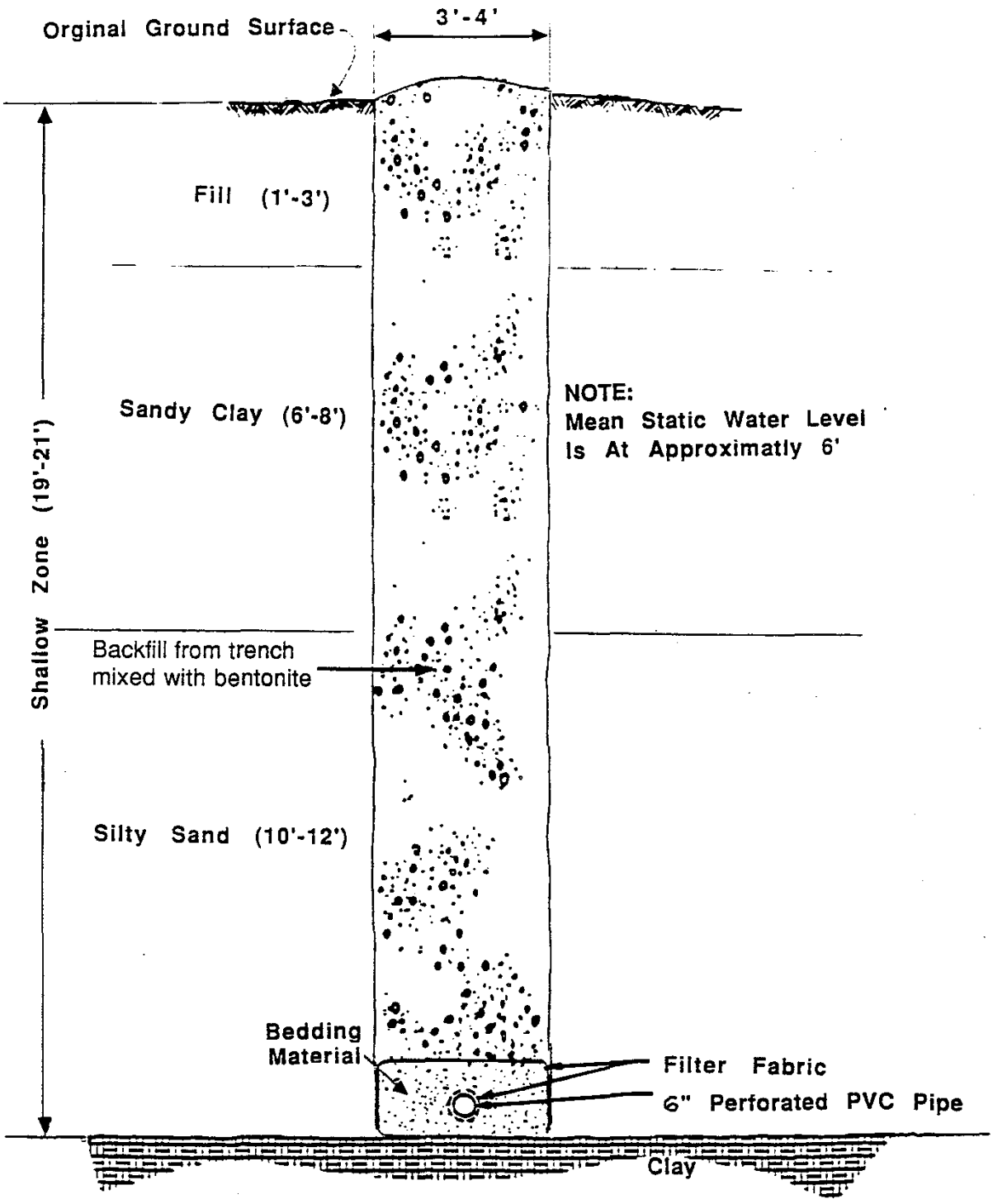


Fig. 3.3 Cross Section of Trench

3.3.6 Trench Drain/Soil Flushing Testing

The trench drain/soil flushing test will be operated for the lesser of 90 days or 10 days after the measured volume of the flow from the trench has stabilized. This steady state flow rate will be used to calculate aquifer characteristics and evaluate the efficiency of soil flushing to remove contaminants.

Soil samples to six foot depth will be taken at two-foot intervals from three randomly selected points within the test area. These samples will be analyzed for base neutral compounds using standard CLP protocol. The results will be used as a base line for comparison with later samples. At the completion of the pilot test run, samples will be taken, as before, from borings as close as possible to the previous sample points and tested. The measured reduction in total carcinogenic PAHs between the samples will be used to demonstrate the effectiveness of the system and predict the time which will be required to bring the flushed soils to within remedial goals. If the tests indicate that more time is needed to produce meaningful results, the pilot test will be continued.

If in-situ bioremediation (as provided for in the ROD) is to be evaluated, a similar test and evaluation procedure will be followed with biological agents added to the flush water in lieu of surfactants.

3.4 Performance of Soil Washing Pilot Tests

Pilot testing will be performed during the Remedial Design (RD) phase to determine the methods, equipment, washing agents, and criteria to be used for soil washing. The results of these tests will be used to design the soil washing unit for the RA.

3.4.1 Design of Soil Washing Pilot Test

The soil washing pilot test unit will be designed to reduce the concentration of potentially carcinogenic PAHs in soil excavated from affected soils in the SE corner of the site to levels which meet the criteria of 700 ppm total potentially carcinogenic PAHs and no leaching potential (as defined in Appendix 1). The unit will consist of, at a minimum, a screening stage, two-tank washer stage, a pH adjustment stage, a rinse stage, and a dewatering stage.

3.4.2 Soil Wash Pilot Test

Soils to be used for the pilot test will be selected from the areas of the SE corner determined in the soil investigation to have the highest concentrations of potentially carcinogenic PAHs. Less affected soils and soils samples representative of all soil types in the affected areas will also be used during the pilot test to establish a range of surfactants and wash time for the final design of the soil washing unit. A screening stage will be used to remove hardened residue, rocks, and debris which will be disposed of appropriately. Prior to putting the soil into the

first wash tank, surfactants will be added and the mixture agitated by counter current or mechanical means. The soil will then be transferred to a second wash tank, more surfactants added, and the mixture again agitated. At the completion of the second wash cycle, the soil slurry will pass into a rinse tank and agitated with fresh water. The rinsed soils will then be passed to the dewatering phase and retained for testing. Contaminated water produced during the wash, rinse, and dewatering cycles will be stored in on-site tanks for testing and treatment in the water treatment pilot test. Records will be maintained of type and quantity of surfactants used, wash times, temperature, and other operational factors needed for design of the full scale soil washing unit.

3.4.3 Testing

The testing criteria for washed soils will be as previously stated in Section 3.1. After washing the soils, they will be tested to determine if the criteria of less than 700 ppm total potentially carcinogenic PAHs and no leaching potential have been met. If this criteria has not been achieved, the wash procedure will be modified to produce washed soils with sequentially lower concentrations until sampling shows the criteria has been met. Wash and rinse water will also be tested prior to and after treatment as a part of the water treatment pilot test. Testing methodology including sample handling for this pilot test will be included in the SAP to be produced as a part of the RD.

3.5 Performance of Water Treatment Pilot Test

A pilot study of the water treatment system will be performed to define the design of the system, to confirm the effectiveness of the water treatment, and to confirm that water quality standards after dilution with Hunting Bayou, or pretreatment standards for discharge to POTW, can be met. Water to be treated in the water treatment pilot test will be from three sources: the groundwater extraction well pilot test, the trench drain pilot test, and the effluent from the soil washing pilot test. Water to be treated will be mixed and/or diluted to provide a full range of pH level, PAHs, solvent, and metals concentrations anticipated for water treatment at this site.

3.5.1 Treatment Unit Design

The water treatment pilot test will include all components of the full-scale water treatment system. The study will be designed to provide Best Available Technology (BAT) treatment performance equal to OCPSF guidelines. The system will include an oil-water separation stage, a flocculation stage which will use polymers to remove suspended solids, a reactor stage which will use activated carbon adsorption and biological degradation, and a filtration stage which may also include biological treatment.

If in-situ bioremediation is being used, water to be reinjected may be treated with nutrients and oxygen prior to reinjection.

3.5.2 Testing

The pilot test will be monitored to gather the data needed to refine and complete the design of the full-scale water treatment system to be used during the RA and to determine the BAT treatment performance to be achieved during remediation. Both the influent and effluent water quality will be monitored as will the quantity and characteristics of the organics removed by the system. Operational parameters will also be monitored. The type and frequency of the sampling to monitor the water treatment pilot test will be given in the SAP to be issued at the start of the RD.

The water treatment pilot test will be run concurrently with the other pilot tests in order to process water produced by the other tests. On-site water tanks will be provided to store both untreated and treated water. Pre-testing storage tanks will be used to provide operational flexibility, and post treatment storage will allow testing of effluent to be completed prior to discharge. This pilot test will require approximately 4 to 6 months.

3.6 Discharge of Treated Wastewater and Groundwater

The wastewater treatment system will treat both wastewater from the soil washing operation and affected groundwater from the extraction wells and collection trenches. This system will consist of phase separation followed by treatment and filtration.

Treated wastewater not required for soil flushing or groundwater remediation operations will be discharged to the drainage ditch leading into Hunting Bayou or to a public sewer system. If discharged into Hunting Bayou, an NPDES permit will be obtained. If not discharged into the Bayou, then the water will be sent to a public sewer system, pursuant to a Publicly-Owned Treatment Works (POTW) permit to be obtained.

If treated water volumes are insufficient for operations, tap water will be used as make-up water for both soil washing and injection procedures.

3.7 Confirmational Sampling Plan and Analytical Methods for Washed Soils and Treated Water

Objectives

Washed soils and treated water to be recycled will be sampled and analyzed to verify that they meet the remedial goals specified in the ROD. A Sampling and Analytical Plan (SAP) will be developed as a part of the RD.

Washed Soils

Composite soil samples will be taken from washed soils. These samples will be tested to confirm that they meet the criteria of 700 ppm total potentially carcinogenic PAHs and no leaching potential. When this criteria has been met, then the soil will be considered remediated and will be stockpiled, moisture conditioned, and used as backfill material in the excavated areas.

Treated Water

Treated water will be tested prior to being used for soil flushing, in the soil washing unit, or discharged to the Bayou or POTW. Water which is to be used in the remediation processes will be tested to show that NAPLs have been removed prior to its reuse. The sampling and analysis of this water will be as described in the Sampling and Analytical Plan.

Under the circumstance that the volume of treated water exceeds the needs the remediation processes, the excess water will be treated further to meet applicable discharge requirements and ultimately discharged to either the Bayou or POTW. Samples of treated water will then be taken and analyzed as specified in the SAP prior to discharge.

3.8 Confirmational Sampling Plan and Analytical Methods for Flushed Soils

After the soil flushing operations start, the affected soils will be monitored quarterly to determine when the flushing process may be ended.

Three randomly located borings will be made to a depth of six feet from each of the two flushing areas. Each boring will be sampled by split spoon at two-foot intervals and tested using the same methodology developed for washed soils. When test results indicate that the soil meets the criteria of 700 ppm total potentially carcinogenic PAHs and no leaching potential has been met, the flushing process will be complete. If EPA determines that no significant benefits can be achieved during a one-year period and the ROD goals have not been met, other treatment may be considered.

3.9 Criteria for Design and Placement of Cap

A cap will be designed to cover the areas in the southeast corner of the site which will be remediated by soil washing. It will be placed over the remediated areas after the excavations have been backfilled with washed soils.

The cap will be designed only to maintain structural stability in the washed soils and will be sloped to drain to existing drainage channels. If any additional drainage channels are required, they will be designed.

3.10 Air Monitoring

Baseline air quality investigations were performed during the RI to characterize background ambient air conditions and assess organic air constituents. The data indicated levels typical to the Houston area.

Real time air monitoring will be performed at each work area during the RA as defined in the Health and Safety Plan (HSP).

3.11 Applicable or Relevant and Appropriate Requirements (ARARs)

The goal of the Remedial Design will be to meet the following ARARs:

National Primary Drinking Water Standards: Groundwater treatment performance will attain all final Maximum Contaminant Levels (MCL) as listed in Table 2 of the ROD.

National Secondary Drinking Water Standards: Groundwater treatment performance will attain all final secondary drinking water standards as listed in Table 2 of the ROD.

Maximum Contaminant Level Goals (MCLGs): This is not an ARAR, but is another factor to be considered. Groundwater treatment performance will attain the MCLGs for those contaminants where the MCLs have yet to be promulgated.

Underground Injection Control Requirements: The wells through which treated groundwater will be reinjected into the aquifer will be designed to comply with the Class V well regulations.

Water Quality Criteria: Discharge of excess treated water (which will not be reinjected) will comply with these criteria for compounds not regulated by state water quality standards. The discharge, after dilution with Hunting Bayou, must not exceed these criteria.

National Pollution Discharge Elimination System: Discharge of excess treated water will comply with Best Available Technology (BAT) and water quality standards. The BAT treatment performance is considered equal to that required for the Organic Chemical, Plastics, and Synthetic Fibers (OCPSF) effluent guidelines which were promulgated by EPA for discharges from organic chemical facilities including those manufacturing creosote-type products. The discharge will not exceed these criteria. In addition, the discharge, after dilution with Hunting Bayou, must not exceed state water quality standards. A permit will be required because the point of discharge will be offsite.

National Pretreatment Standards: Discharge of excess treated water will comply with these standards by also complying with Best Available Technology for OCPSF facilities. Pretreatment requirements for these facilities are equal to those for BAT.

Occupational Safety and Health Act: Remedial action will be conducted consistent with the OSHA regulations for personnel protection and safety.

Hazardous Materials Transportation Act: Off-site transport of recovered creosote will require handling in a manner consistent with this act.

RCRA Standards Applicable to Generators and Transporters of Hazardous Waste: Off-site transport of recovered creosote for incineration or recycling will require manifesting.

Releases from Solid Waste Management Units (40 CFR 264(F)): Groundwater not recovered will comply with the levels required by this regulation.

Tank (40 CFR 264(J)): Tanks temporarily storing recovered creosote will be designed to comply with this regulation.

Land Disposal Restrictions: The treatment methods used as parts of the remedial action satisfies the statutory requirement to "...substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized."

Texas Allowable Limits of Metals in Drinking Water: Groundwater treatment performance will attain these levels.

Texas Water Quality Standards for Surface Waters: Discharge of excess treated water will comply with these standards. The discharge, after dilution with Hunting Bayou, must not exceed these standards.

Texas Prohibition of Air Contaminants which Adversely Affect Human Health: Soil disturbance will be minimized during remediation to assure compliance with these regulations. If necessary, an inflatable dome can be constructed over the soil areas to contain any release. Air will be monitored during remediation to observe compliance.

Texas Storage of Volatile Organic Compounds: Tanks temporarily storing recovered creosote and associated volatile compounds will be designed to comply with this regulation.

Texas Oil/Water Separators: The oil/water separator in the groundwater treatment system will be designed to control volatile emissions as required by this regulation.

Texas Vacuum Producing Systems: The groundwater recovery system uses a vacuum. This system will be designed to prevent emissions requiring incineration under this regulation.

4.0 REMEDIAL DESIGN

4.1 Selection of Remedial Designer

The firm selected to perform the RD will be chosen on the basis of qualifications and experience on projects similar to the South Cavalcade Site. The remedial design contractor will be qualified to do business in the State of Texas. The EPA will retain the right to disapprove any or all contractors proposed for Work in accordance with the terms of the Consent Decree.

4.2 Remedial Design Work Plan Development

A Remedial Design Work Plan (RDWP) will be submitted for review by EPA. The RDWP will cover the design tasks, plans, and schedules for implementation of all remedial design and pre-design tasks including, but not limited to the following: (a) Remedial Design Sampling and Analysis Plan; (b) Remedial Design Quality Assurance Project Plan (RD QAPP); (c) pilot studies; (d) 30% design submittal; (e) 60% design submittal; (f) 90% and 100% design submittals; and (g) Community Relations Plan. In addition, the Remedial Design Work Plan shall include a Health and Safety (H&S) and Contingency Plan for design activities, and a schedule for completion of the Remedial Action Plan (RAP).

The RD will begin after EPA acceptance of the RDWP. The RD will include field work to develop the scope of soil remediation and pilot testing to develop and refine the major elements of the design. Based on this field work, the full-scale design work will be developed.

The RD will consist of the tasks listed below. A schedule of these tasks is given in Section 9.

Task 1.0: Site Facilities, Utilities and Security Fencing

Site facilities required during the design phase to perform soil investigation and pilot testing will be developed. These facilities will be designed to maximize their reuse during the Remedial Action and Operation and Maintenance Phases of the project. This task includes, but is not limited to:

- Site structures
- Utilities
- Storage tanks

During the RD, facilities will be provided to EPA or their contractors for their oversite activities.

Task 2.0: Soils Investigation to Delineate Areas for Possible Remediation

Areas in the north, south, and southeast portions of the site will be sampled as described in section 3.1 of this document to better define the areas to be remediated by soil washing and in situ soil flushing.

Task 3.0: Design of Monitoring Well

A deep well screened in the 500-foot zone will be designed to monitor deep aquifer water quality during both the Remedial Action phase and the Operation and Maintenance phase.

Task 4.0: Extraction Well Pilot Test

Pilot testing of extraction wells will be performed to develop design data for the groundwater RD.

Task 5.0: Trench Drain Pilot Test

A pilot test of a trench drain will be conducted on the north end of the site to develop design data for the soil flushing and groundwater RD.

Task 6.0: Soil Washing Pilot Test

A pilot test of the proposed soil washing unit will be conducted to provide data for the full-scale soil washing RD.

Task 7.0: Water Treatment Pilot Test

A pilot test of proposed water treatment system will be conducted to refine and confirm the design of the full-scale water treatment plant.

Task 8.0: Design of Soil Remediation System

This task includes the detailed design of both the soil washing and soil flushing systems. The design will be based on the soil investigation and pilot studies and will include provisions for the proper disposal of materials removed during the screening stage prior to soil washing.

Task 9.0: Design of the Groundwater Remediation System

This task will include the detailed design of injection and extraction wells and trench drains. It will be based on the results of the pilot tests. Existing groundwater wells will be used for monitoring the other aquifers, including the aquifer under the concrete slabs, to check the effectiveness of the system.

Task 10.0: Design of the Water Treatment System

This task will include all aspects of the water treatment system to treat both extracted groundwater and wash water from the soil washing procedures. The design will be based on the results of the water treatment pilot test and will include provisions for the proper disposal of accumulated sludges and filter solids from the water treatment system.

Task 11.0: Capping of Washed Soils

A cap will be designed to cover the areas in the southeast portion of the site to be remediated by soil washing. The cap will be constructed over the washed soils after they have been replaced in the excavations. The cap will be designed to drain to existing drainage channels.

Task 12.0: Construction Sequence and Project Schedule

A sequence of construction activities, showing all parts of the RA work, will be prepared. A project schedule will be prepared showing activity duration and major milestones.

Task 13.0: Permits

All permits will be obtained for remedial work, utilities, and discharges from the appropriate agencies, if any are necessary.

Task 14.0: Access Agreement

Access Agreements shall be obtained in a timely manner in accordance with Section XV of the Consent Decree.

4.3 Development of Remedial Design Documents

The RD documents will be prepared in accordance with EPA's Remedial Action/Remedial Design Guidance Document.

4.3.1 30% Design Submittal

This design submittal will consist of a) design criteria, b) results of pilot studies, c) results of additional field sampling, d) preliminary plans, drawings, and sketches, e) required specifications in outline form, and f) a preliminary construction schedule.

4.3.2 60% Design Submittal

The Design Submittal will consist of approximately 60% of the completed drawings and technical specifications. The 60% Design Submittal will address comments from the 30% Design Review.

4.3.3 90% Design Submittal

The Design Submittal will consist of a) final plans and specifications; b) request for proposals or invitation for bids for Remedial Action; c) Construction Quality Assurance Project Plan (CQAPP); d) Confirmational Sampling Plan; and e) Draft O&M Plan.

4.3.4 100% Final Design Submittal

This document will consist of the 90% Design Submittal with all comments incorporated. The Final Design will be submitted to EPA for its review, approval, and acceptance.

5.0 REMEDIAL ACTION

5.1 Selection of Remedial Action Contractor

A list of contractors potentially capable of providing the necessary services will be prepared, and firms on the list will be given an opportunity to provide a statement of qualifications outlining their capabilities and expertise. Qualifications will be evaluated on the basis of experience, technical capabilities, financial soundness, and general responsiveness. Firms which are judged to be qualified to perform the RA will be placed on a list from which bids will be solicited. The list of potential RA contractors will be submitted to the EPA who retains the right to disapprove any contractor they feel is not qualified or is ineligible to perform the work.

5.2 Remedial Action Construction Management

The Construction Manager will provide project management and supervision as the oversight contractor for work on the RA including:

- Preparation of the Remedial Action Plan
- Review subcontractor plans
- Monitor compliance of subcontractor plans and contract terms
- Coordinate subcontract work
- Provide field engineering
- Monitor progress of work
- Implement health and safety requirements
- Monitor QA/QC actions
- Review and approve claims for payment by subcontractor
- Review and evaluate change order requests
- Compile all required project documentation

The construction management team will include full-time, on-site personnel trained and experienced in hazardous construction projects and proceedings.

5.3 Implementation of Remedial Action

The RA will be implemented in accordance with contract documents, EPA-approved design plans and specifications, and the schedule of submittals and milestones. The action will consist of the following tasks:

Task 1.0: Remedial Action Plan

A Remedial Action Plan (RAP) will be prepared to describe the methodologies, plans, and schedules for all aspects of the RA work: The RAP will include but not be limited to:

- Selection of Contractors to perform Remedial Action
- Execution of the RA Construction Contract
- Implementation of the Construction Quality Assurance Plan

- Development and submittal of Ground Water Monitoring Plan
- Identification of and satisfactory compliance with permitting requirements
- Implementation of the Operating and Maintenance Plan
- Development and submission of the Remedial Action Report
- Completion of the Remedial Action and Operation and Maintenance

Task 2.0: Records and Reports

Records and reports of all site activities will be maintained and compiled to be used as documentation for final certification of the RA. These records will include but not be limited to:

- Progress reports (daily, weekly, monthly)
- Inspection reports
- Discrepancy reports with explanation of resolution
- Change orders and claims
- DOT transportation manifests
- Lab reports
- Air monitoring records
- Field logs
- Photographic documentation
- QA/QC Reports

Task 3.0 Implementation of Remedial Action

Upon approval of the RAP the activities required to complete the RA will be implemented. These activities will include, but not be limited to:

- Implementation of Construction Project Operating Plans
- Installation and start up of the water treatment system
- Installation and start up of the ground water collection system
- Installation and start up of the soil flushing system
- Installation and start up of the soil washing system
- Completion of soil washing and capping
- Certification of water treatment system performance
- Certification of ground water extraction system performance
- Certification of soil flushing system performance
- Installation of deep monitoring well

Task 4.0: Prefinal Inspection

A prefinal inspection will be made upon preliminary completion of project site facilities. The Inspection Party will include the PRP construction manager, contractors, and representatives from EPA and the State. It will consist of a walk-through inspection of the entire site to determine that the project is complete and consistent with the contract documents and the EPA approved remedy. Since this project includes a groundwater treatment system, certification will be given that the water treatment system has been operating and is performing in accordance with remedial goals. The EPA shall have the right to take samples to verify compliance with the remedial goals.

Task 5.0: Prefinal Inspection Report

A prefinal inspection report will be prepared based on findings of the prefinal inspection. The report will list:

- Outstanding construction items
- Actions required to resolve outstanding items
- Completion dates for outstanding items
- Date for final inspection

The prefinal report will be submitted to the EPA and state.

Task 6.0: Final Inspection and Certification

Final inspection of the project will be made when the outstanding items have been completed. The participants will include all parties from the prefinal inspection. The final inspection will consist of a walk-through inspection of the project site with emphasis on the checklist from the prefinal inspection. The inspection will confirm that all outstanding items have been completed.

Task 7.0: Remedial Action Report

A RA report will be prepared and submitted to the EPA within 90 days after the final inspection. The RA report will include:

- A brief description of outstanding construction items from the prefinal inspection and an indication that the items were resolved,
- A synopsis of the work defined in the Remedial Design Documents and the RAP and a certification that this work was performed,
- An explanation of any modifications to the Work, and why these were necessary for the project,
- Certification that the remedy is operational and functional, and
- Any documents necessary to support the sections of the report listed above.

If the RA fails to achieve the remedial objectives set forth in the ROD, a Failure Evaluation Report will be submitted for EPA's approval. If it is determined that the failure was due to a problem with the RA, a written report evaluating alternatives will be submitted for EPA's approval.

6.0 PROJECT OPERATING PLANS

The following Project Operating Plans will be submitted in accordance with the consent decree.

6.1 Health and Safety Plan

The Health and Safety Plan will address the protection of on-site personnel and the public from any physical, chemical and/or biological risks associated with field activities during the RD. A revised Health and Safety Plan, for work during the RA, will be developed during the RD.

6.2 Quality Assurance Project Plan

A Quality Assurance Project Plan will be developed. This plan will address quality assurance and quality control testing for sample collection, lab procedures, and construction activities. It will ensure that the intent of the design is met under the actual conditions, verify the assumptions made during design stage, and permit rapid engineering response to any conditions that may require adjustments to the design.

6.3 Sampling and Analytical Plan

The Sampling and Analytical Plan will describe sampling techniques, equipment, handling and chain-of-custody procedures, and analytical methods to be used during RD and RA. This plan will be used in the determination of the extent of affected soils above removal standards to be remediated, confirmational sampling of washed soils, treated water, and flushed soils.

6.4 Contingency Plan

This plan is contained within the Health and Safety Plan. It outlines the procedures to be followed in the event of an accidental release to the environment. A contingency plan will be prepared to address safety concerns and notification procedures to be implemented in the event of an accident, a system failure, severe weather, or an unexplained event. In addition, the plan will set action levels and proposed response activities.

6.5 Operations and Maintenance Plan

The Operation and Maintenance Plan will be developed consistent with applicable or relevant and appropriate requirements for the long term operation and maintenance of the site after RA activities have been completed. The purpose of the operation and maintenance activities is to verify and monitor the effectiveness of the selected remedy. Groundwater monitoring will continue after the completion of the RA and annual reports will be prepared accordingly until the remedial goals are achieved. The initial draft O&M Plan will be submitted with the 90% design. The final O&M Plan will be developed in accordance with the schedule outlined in Section 9.7.

7.0 PROJECT DELIVERABLES

7.1 Reports on Soil Investigation and Pilot Tests

The final soil investigation and pilot study reports will be submitted for:

- Soil limits to be remediated
- Extraction well pumping pilot test
- Trench drain/soil flushing pilot test
- Soil washing pilot test
- Water treatment pilot test

7.2 Remedial Design

The deliverables for the RD work will include the 30%, 60%, 90% and 100% Design Submittals. These documents will provide pilot test results, the construction plans and specifications required to accomplish the RA as defined in the ROD. In addition to these technical requirements, the draft Construction Schedule, the draft Operations and Maintenance Plan, the Quality Assurance Project Plan, the Health and Safety Plan and the Sampling and Analysis Plan will also be submitted.

7.3 Remedial Action

During the RA, monthly progress reports will be submitted to the EPA. These reports will contain: estimates for the percentage of the project completed with a comparison to planned activities and progress, work performed on the site, design changes, problems or potential problems encountered, projected work for the next reporting period, and copies of inspection reports, change orders, DOT manifests, groundwater and air monitoring data, and laboratory reports. Groundwater and air monitoring reports will be prepared quarterly during the first year of RA.

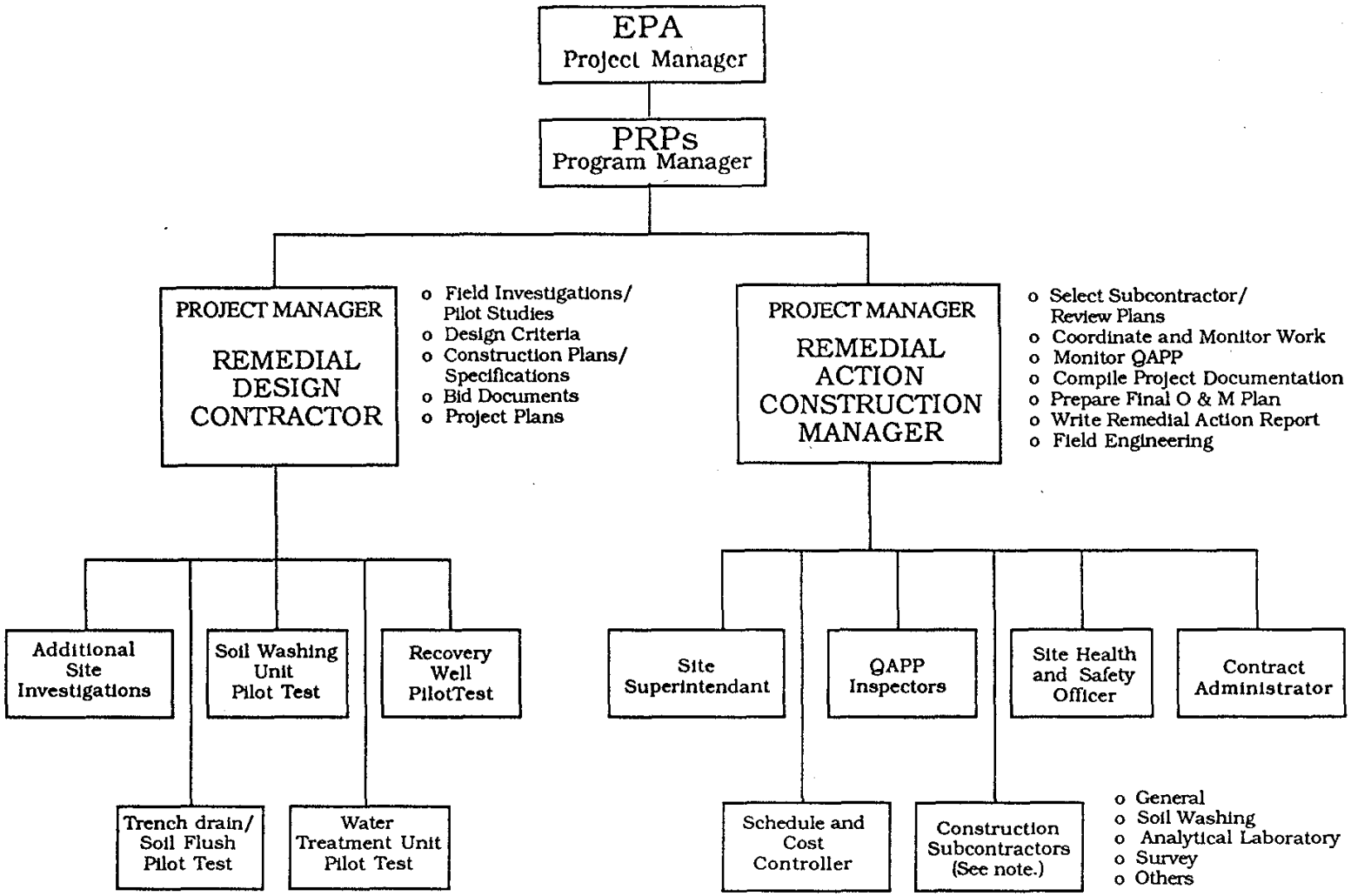
After the prefinal inspection, a report will be prepared that outlines any outstanding construction items, the actions required to resolve these items, and dates for the completion of these items and the final inspection.

Upon completion of Remedial Action, a Remedial Action report will be prepared and submitted to certify that all site work has been completed satisfactorily.

The Operation and Maintenance Plan will be updated and finalized to reflect actual conditions.

8.0 PROJECT ORGANIZATION

An architecture/engineering firm will be selected to perform the RD, and a construction management firm selected to direct the RA. It is assumed that all site activities needed to support the RD will be done under the remedial design contractor while all RA activities will be under the control of the RA construction manager. An organizational chart is shown on Figure 8.1.



Note: Breakdown of Subcontract work will be finalized after design is complete.

Fig. 8.1 Project Organization

9.0 SCHEDULE AND MILESTONES

9.1 Schedule

All work performed by Beazer shall be performed by qualified contractors in accordance with the schedule specified below.

9.2 Remedial Design Work Plan

1. Within 30 days of entry of the Consent Decree, Beazer shall submit to the EPA the Remedial Design Work Plan (RDWP) for EPA's review. This plan should cover the pilot and the design phase.

2. Within 45 days of receipt of RDWP, EPA will notify Beazer of their comments.

3. Within 45 days, Beazer will submit to EPA a revised final version of the RDWP in response to EPA's comments.

4. Within 30 days, EPA shall either approve or disapprove the RDWP with comments.

5. If the RDWP is disapproved, Beazer shall respond to each comment and resubmit the RDWP within 30 days of receipt of EPA's disapproval.

6. Within 15 days of receipt of the resubmitted RDWP, EPA will approve or disapprove the RDWP.

9.3 Phase I - Pilot Studies and Soil Investigation

1. Within 30 days of entry of the Consent Decree, Beazer shall provide EPA with a list of potential remedial design contractors and apply for an NPDES permit to discharge of water generated by the pilot studies. (It is assumed sufficient information will be available to complete the permit application. The processing and approval of this permit may take in excess of 180 days.)

2. Within 20 days of receipt of the list of potential remedial design contractors, EPA shall notify Beazer of any disapproved contractor.

3. Within 45 days of EPA's response, Beazer shall notify EPA of selected contractor(s).

4. Within 30 days of EPA's approval of the RDWP, Beazer shall start the field work for the Site Investigation.

5. Within 20 days of the issuance of the permit to discharge water, Beazer shall start field work for the pilot studies.

6. During the pilot study field work, meetings shall be held monthly (or less frequently if mutually agreed upon in writing) between the EPA and Beazer to discuss the status of the field work.

7. Beazer shall notify EPA within 10 days of the completion of the field work for each pilot study.

8. Beazer shall submit to EPA within 60 days of the completion of all field activities for each pilot study the following:

    1. Draft Soil Washing Pilot Study Report
    2. Draft Trench Drain/Soil Flushing Pilot Study Report
    3. Draft Water Treatment Pilot Study Report
    4. Draft Extraction Well Pilot Study Report
    5. Draft Soil Investigation Report

9. Within 45 days after receipt of each draft report, EPA will provide comments to Beazer.

10. Within 45 days of receipt of EPA's comments on each draft report, Beazer shall submit to EPA a final report which responds to EPA's comments.

11. Within 30 days of receipt of each final report, EPA will notify Beazer of its approval or disapproval with EPA comments.

12. If a final report is disapproved, Beazer shall respond to each comment and resubmit the report within 15 days of receipt of EPA's disapproval.

13. Within 15 days of receipt of the resubmitted final report, EPA will approve or disapprove the report.

14. If, based on the results of any of the pilot studies, the EPA determines the objectives of the Remedial Action cannot be met, Beazer shall within 30 days of such determination by EPA submit to EPA a brief summary of alternatives. If after review EPA determines further action or investigation is required, Beazer shall initiate such additional action or investigation in accordance with a mutually agreed upon schedule.

9.4 **Phase II - Remedial Design**

1. Within 20 days of receipt of EPA's approval of the pilot study reports and the soil investigation report, a meeting shall be held with EPA, Beazer, and the Remedial Design Contractor to discuss:

    a) design objectives and deliverables
    b) the schedule for the Remedial Design and all remaining phases of the Remedial Action

2. During the RD, meetings shall be held at least monthly (unless otherwise agreed to in writing) among the Project Managers to discuss the status of the RD.

3. Beazer shall submit to EPA the draft RD upon completion of 30%, 60%, 90%, and 100% of the design. EPA will review each RD submittal in accordance with the agreed upon schedule in the RDWP and provide comments to Beazer. Beazer shall incorporate revision to each submittal, based on EPA's comments, in the next RD submission.

4. Within 30 days of receipt of the 100% final RD, EPA will notify Beazer of its approval or disapproval with comments.

5. If the final RD is disapproved, Beazer shall respond to each comment and resubmit the final RD within 20 days of receipt of EPA's disapproval.

6. Within 20 days of receipt of the resubmitted final RD, EPA will approve or disapprove the RD.

9.5 **Remedial Action**

1. Within 20 days of the 90% design submittal to EPA, Beazer shall provide EPA with a list of potential Remedial Action contractors. Within 20 days of receipt of such list, EPA shall notify Beazer of any disapproved contractor.

2. Within 45 days of receipt of EPA's response, Beazer shall notify EPA of the selected contractor(s).

3. Within 60 days of receipt of the notice of contractor selection, Beazer shall submit to EPA a Remedial Action Plan (RAP).

4. Within 60 days of the receipt of the RAP, EPA will provide comments to Beazer.

5. Within 45 days of receipt of EPA's comments on the RAP, Beazer shall submit to EPA the final RAP which responds to EPA's comments.

6. Within 30 days of receipt of the resubmitted final RAP, EPA will approve or disapprove.

7. If the final RAP is disapproved, Beazer shall respond to EPA's comments and resubmit the final RAP within 20 days of receipt of disapproval.

8. Within 15 days of the 90% design submittal to EPA, Beazer will submit an application for an NPDES or a POTW permit for discharge of water generated by the RA. (The processing and approval of this permit may take in excess of 180 days.)

9. Within 20 days of the issuance of the NPDES or POTW permit or EPA approval of the RAP, which ever comes later, Beazer shall mobilize site facilities to initiate the field work for Remedial Action.

10. Beazer shall notify EPA and allow EPA's confirmation that remedial goals have been met prior to placing cap over any area of washed soils.

11. Within 20 days after completion of Remedial Action, Beazer shall notify EPA in writing and shall schedule and conduct a prefinal construction conference and inspection.

12. Within 30 days of the prefinal inspection, Beazer shall submit a prefinal inspection report which outlines the outstanding construction items, actions required to resolve these items, and a date for the final inspection.

13. Within 20 days upon completion of any outstanding construction items, Beazer shall notify EPA in writing and shall schedule and conduct a final inspection for the purpose of verifying the resolution of the outstanding construction items identified in the prefinal inspection. If any items remain unresolved, this inspection shall be considered a prefinal inspection requiring another prefinal inspection report.

9.6 **Remedial Action Report**

1. Within 90 days after EPA's determination of the acceptability of Remedial Action, Beazer shall submit to EPA a draft Remedial Action Report.

2. Within 90 days of receipt of the draft Remedial Action Report, EPA will provide comments to Beazer.

3. Within 60 days of receipt of EPA's comments, Beazer shall submit a final Remedial Action Report which responds to each comment.

4. Within 60 days of receipt of the final Remedial Action Report, EPA will approve or disapprove with comments.

5. If the final Remedial Action Report is disapproved, Beazer shall respond to EPA's comments and resubmit the final Remedial Action Report within 15 days of receipt of disapproval.

6. Within 15 days of receipt of the resubmitted final Remedial Action Report, EPA will approve or disapprove.

7. Within 60 days after approval of the Remedial Action Report, EPA will issue its Certification of Completion for those phases preceding the Operation and Maintenance phase.

9.7 Operation and Maintenance

1. At least 100 days prior to anticipated completion of the Remedial Action, Beazer shall submit to EPA a draft Operation and Maintenance ("O&M") Plan.

2. Within 45 days of receipt of the O&M Plan, EPA will provide comments to Beazer.

3. Within 45 days of receipt of EPA's comments, Beazer shall submit a final O&M Plan which responds to each comment.

4. Within 30 days of receipt of the final O&M Plan, EPA will notify Beazer of its approval/disapproval with comments.

5. Within 20 days of receipt of any disapproval, Beazer shall resubmit the final O&M Plan responding to each comment.

6. Within 20 days of receipt of the resubmitted final O&M Plan, EPA will notify Beazer of its approval/ disapproval.

7. Beazer shall initiate the Operation and Maintenance Phase in accordance with the schedule included in the approved O&M Plan.

9.8 Milestones

The following will be considered project milestones:

1. Initiation of Soils Investigation
2. Initiation of Pilot Studies
   - Water Treatment
   - Pump Testing
   - Soil Flushing
   - Soil Washing
3. Completion of Soil Investigation
4. Completion of Pilot Studies
   - Water Treatment
   - Pump Testing
   - Soil Flushing
   - Soil Washing
5. Initiation of Remedial Design
6. Completion of 30% of Remedial Design
7. Completion of 60% of Remedial Design
8. Completion of 90% of Remedial Design
9. Completion of 100% of Remedial Design

10. Initiation of Remedial Action
    - Completion of RAP
    - Start up of water treatment system
    - Start up of groundwater collection system
    - Start up of soil flushing system
    - Start up of soil washing unit

11. Completion of Remedial Action
    - Soil washing and capping
    - Deep well installation
    - Certification of water treatment system performance
    - Certification of groundwater extraction system performance
    - Certification of soil flushing system performance
12. Completion of Remedial Action Report
13. Initiation of Monitoring, Operation and Maintenance Plan

The schedule for achievement of these milestones will be contained within the approved remedial design documents.

APPENDIX 1

SOUTH CAVALCADE SITE
DETAILED STATEMENT OF WORK

REMEDIAL DESIGN/REMEDIAL ACTION
ANALYTICAL PROGRAM

REMEDIAL DESIGN/REMEDIAL ACTION
ANALYTICAL PROGRAM
SOUTH CAVALCADE SITE

PARAMETER	ANALYTICAL(1) METHOD	NOMINAL(2) P.O.L.	REMEDIAL GOAL
I. GROUNDWATER			
Benzo(a)anthracene	8270	10 µg/l	no detection
Benzo(a)pyrene	8270	10 µg/l	no detection
Benzo(b)flouranthene	8270	10 µg/l	no detection
Benzo(k)flouranthene	8270	10 µg/l	no detection
Chrysene	8270	10 µg/l	no detection
Dibenzo(a,h)anthracene	8270	10 µg/l	no detection
Indeno(1,2,3-cd)pyrene	8270	10 µg/l	no detection
Benzene	8020	2 µg/l	5 µg/l
Ethylbenzene	8020	2 µg/l	142 µg/l
Toluene	8020	2 µg/l	28 µg/l
Xylene	8020	2 µg/l	440 µg/l
Arsenic	7060	1 µg/l	50 µg/l
Chromium	6010	7 µg/l	50 µg/l
Copper	6010	6 µg/l	28 µg/l
Lead	6010	42 µg/l	50 µg/l
Zinc	6010	2 µg/l	100/µg/l
II. SOIL			
Benzo(a)anthracene	8270	660 µg/kg	(3)
Benzo(a)pyrene	8270	660 µg/kg	(3)
Benzo(b)flouranthene	8270	660 µg/kg	(3)
Benzo(k)flouranthene	8270	660 µg/kg	(3)
Chrysene	8270	660 µg/kg	(3)
Dibenzo(a,h)anthracene	8270	660 µg/kg	(3)
Indeno(1,2,3-cd)pyrene	8270	660 µg/kg	(3)
III. LEACHATE			
Benzo(a)anthracene	8270	10 µg/l	(4)
Benzo(a)pyrene	8270	10 µg/l	(4)
Benzo(b)flouranthene	8270	10 µg/l	(4)
Benzo(k)flouranthene	8270	10 µg/l	(4)
Chrysene	8270	10 µg/l	(4)
Dibenzo(a,h)anthracene	8270	10 µg/l	(4)
Indeno(1,2,3-cd)pyrene	8270	10 µg/l	(4)

NOTES:

1) Analytical methods taken from "Test Methods for Evaluating Solid Waste", SW-846, Third Edition, November, 1986.

2) Nominal Practical Quantitation Limits taken from "Test Methods for Evaluating Solid Waste", SW-846, Third Edition, November, 1986. Actual analytical detection limits may vary depending upon sample matrix and laboratory conditions.

3) The remedial goal is that total potentially carcinogenic PAHs be less than 700 mg/kg in soil.

4) The remedial goal is that soils will have no leaching potential for total potentially carcinogenic PAHs as measured by the TCLP test. The target concentration, in the TCLP leachate below which "no leaching potential" will be considered to exist, will be developed during the remedial design and will be based upon public health and technology considerations. Public health considerations will include effects to plausible groundwater users at some distance downgradient from the source area. Dilution/attenuation factors will be considered through modeling efforts. Results of the pilot scale soil washing/soil flushing studies will be used to develop technology considerations.